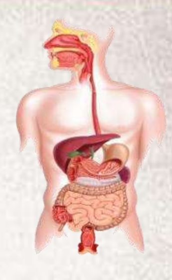
المراجعة رقم (1)

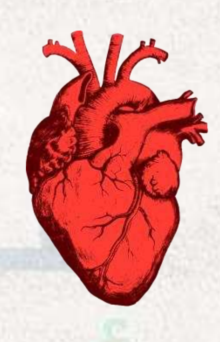




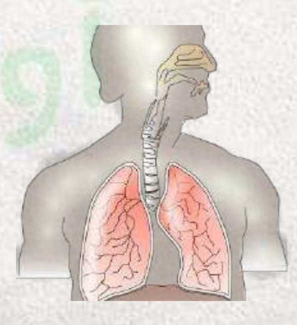


Chapter 1 Nutrition and Digestion in Living Organisms

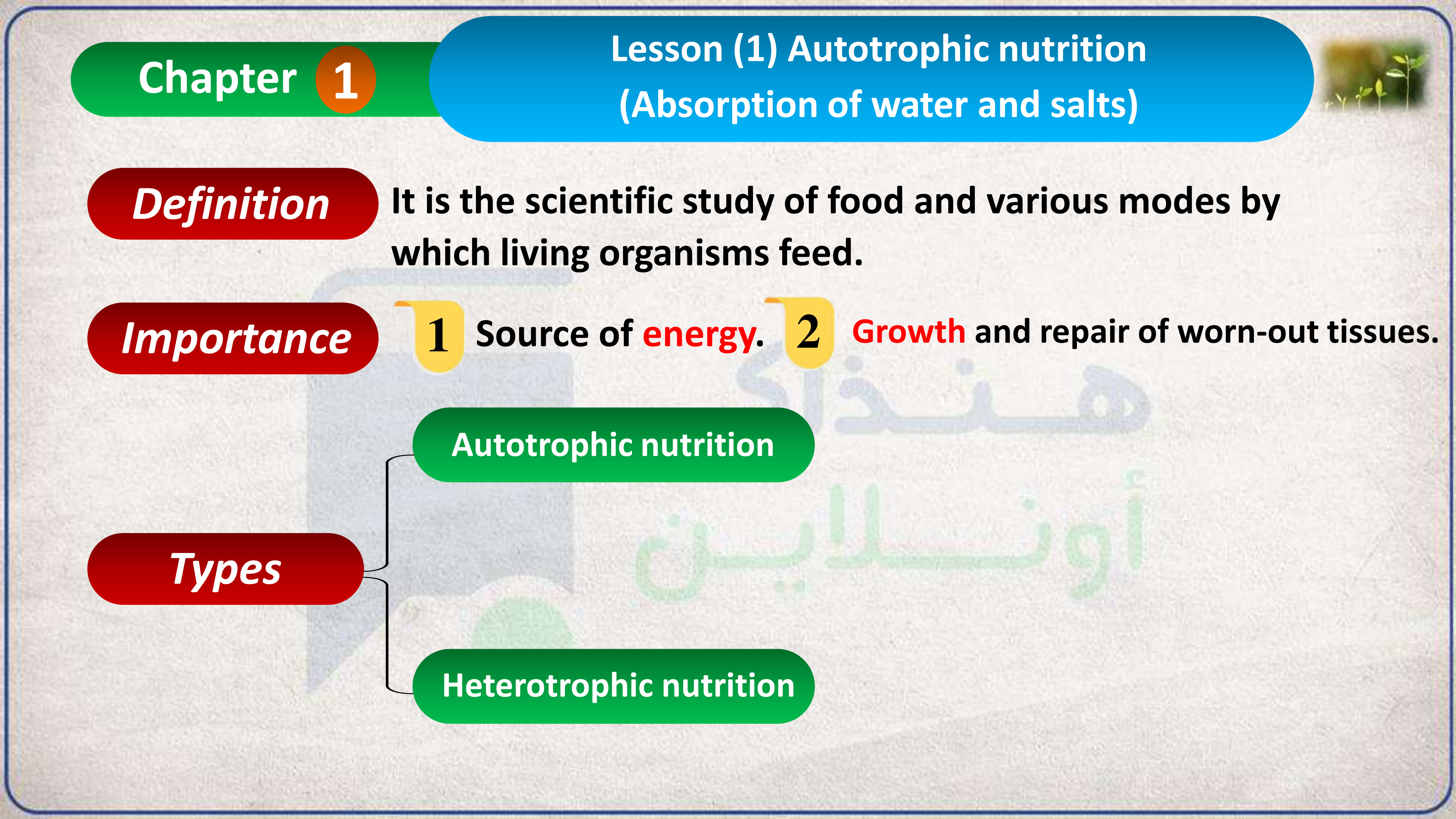


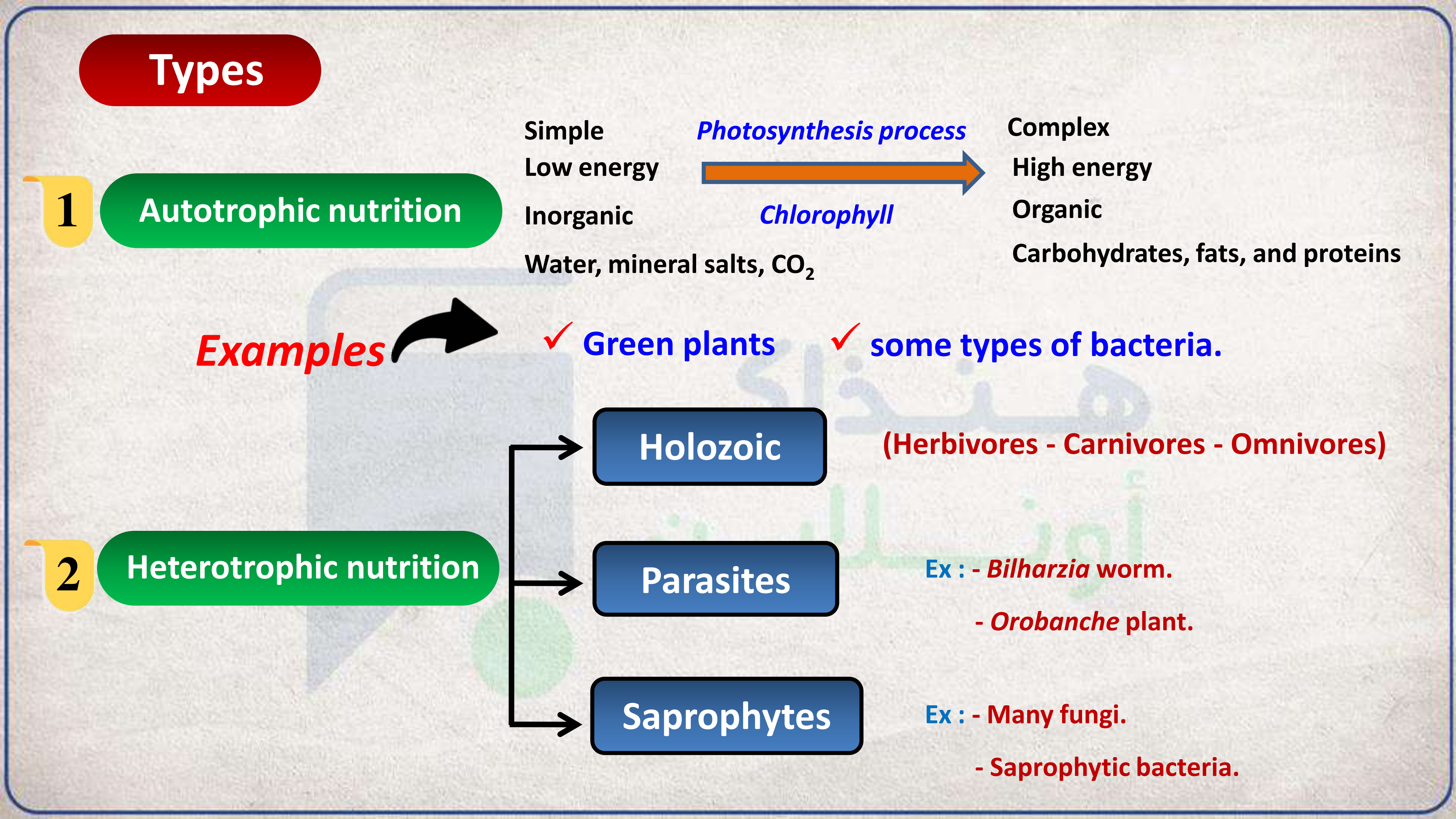


Chapter 2 Transport in Living Organisms



Chapter 3 Respiration in Living Organisms


Chapter 1
Lesson (1) Autotrophic nutrition
(Absorption of water and salts)
Definition
It is the scientific study of food and various modes by which living organisms feed.
Importance
1 Source of energy.
2 Growth and repair of worn-out tissues.
Types
Autotrophic nutrition
Heterotrophic nutrition


Types
1
Autotrophic nutrition
Simple
Low energy
Inorganic
Water, mineral salts, CO_2
Photosynthesis process
Chlorophyll
Complex
High energy
Organic
Carbohydrates, fats, and proteins
Examples
✓ Green plants
✓ some types of bacteria.
2
Heterotrophic nutrition
Holozoic
(Herbivores - Carnivores - Omnivores)
Parasites
Ex : - Bilharzia worm.
- Orobanche plant.
Saprophytes
Ex : - Many fungi.
- Saprophytic bacteria.

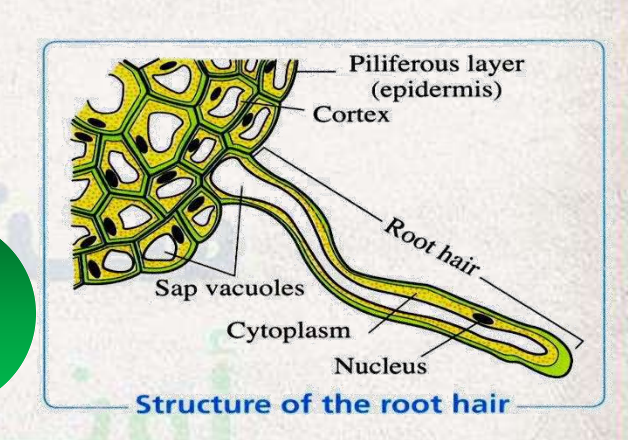


1 Absorption of water and salts process.

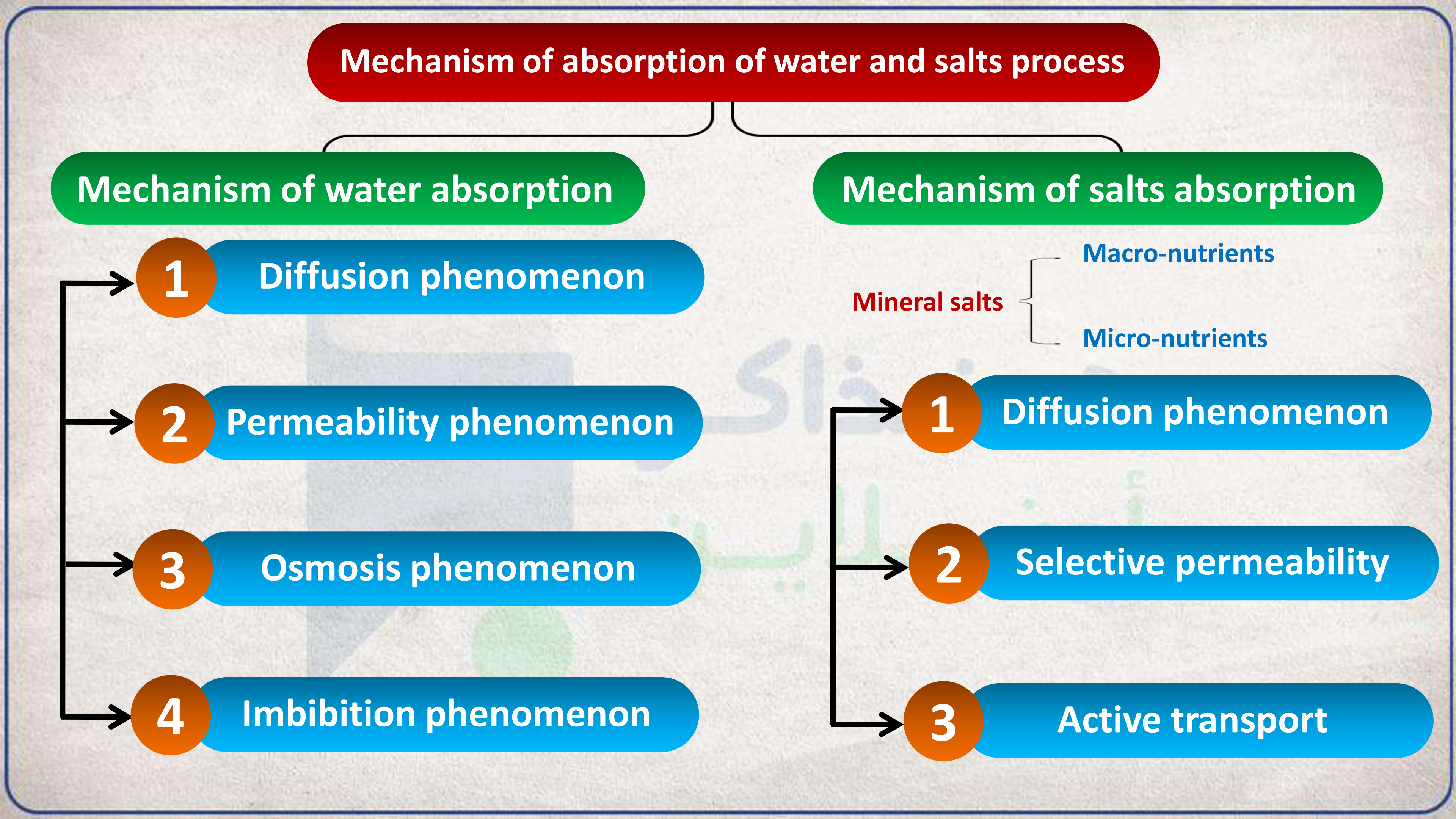
2 Photosynthesis process.

Absorption of water and salts process

- Mechanism of water absorption
- Mechanism of salts absorption



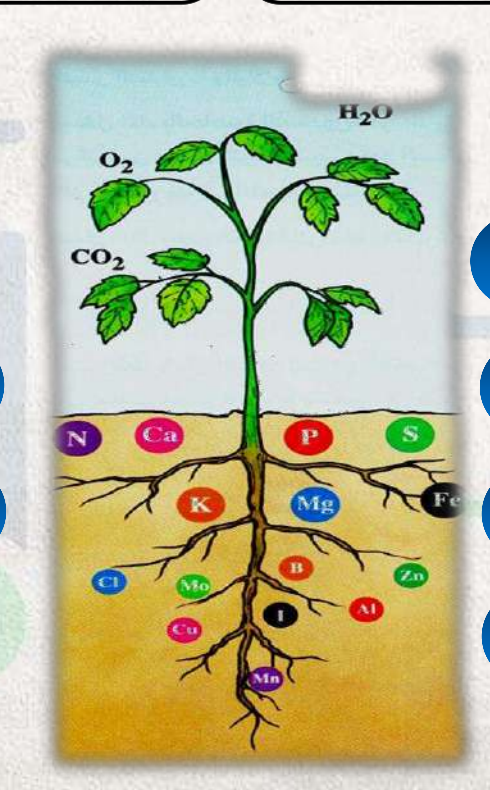
Structure of the root hair


Mechanism of absorption of water and salts process
Mechanism of water absorption
1 Diffusion phenomenon
2 Permeability phenomenon
3 Osmosis phenomenon
4 Imbibition phenomenon
Mechanism of salts absorption
Mineral salts
Macro-nutrients
Micro-nutrients
1 Diffusion phenomenon
2 Selective permeability
3 Active transport

Essential food elements for green plants

Macro-nutrients

- Phosphorus P
- Nitrogen N
- Calcium Ca
- Sulphur S
- Iron Fe
- Potassium K
- Magnesium Mg



Micro-nutrients

- Boron B
- Chlorine Cl
- Zinc Zn
- Molybdenum Mo
- Manganese Mn
- Al Aluminum
- Copper Cu
- Iodine I



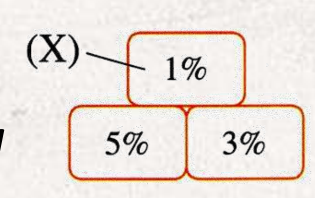


EXAM NIGHT

Multiple choice questions



The opposite figure shows the concentration of the cellular sap inside three adjacent cells, in which direction the movement of water by osmosis will be from and to cell (X) ?



a

b

c

d



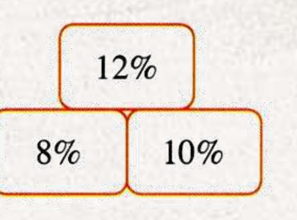


EXAM NIGHT

Multiple choice questions



The opposite figure shows the concentration of the cellular sap inside three adjacent plant cells, which of the following choices shows the path of the water transport among these cells ?



(a)

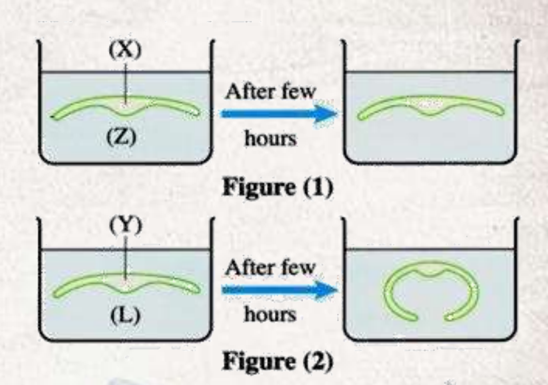
(b)

(c)

(d)



(X) and (Y) represent two identical transverse sections in a plant leaf, (X) was put in sugar solution (Z) as shown in figure (1), while (Y) was put in sugar solution (L) as shown in figure (2), we can deduce from the two figures that the ……….



- concentration of solution (Z) equals that of solution (L).
- concentration of solution (Z) is higher than that of solution (L).
- concentration of solution (L) is lower than that of the solution inside the sap vacuoles of the cells in section (X).
- concentration of solution (Z) equals to that of the solution inside the sap vacuoles of the cells in section (Y).

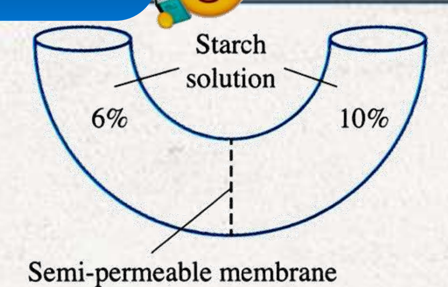




EXAM NIGHT — **Multiple choice questions**

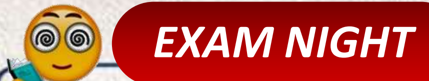


In the opposite figure, an amount of starch solution (10%) is put in the right side and another equal amount of starch solution (6%) is put in the left side, what do you expect to happen after passing time ?



- Water will transfer from right to left.
- Starch will transfer from right to left.
- Water will transfer from left to right.
- Starch will transfer from left to right.

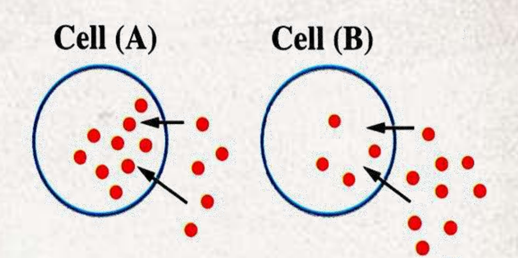




Multiple choice questions



From the opposite figure, which of the following cells need(s) ATP molecules to transfer the molecules to it ?



- Cell (A) only.
- Cell (B) only.
- Cell (A) and (B).
- None of them uses ATP molecules.





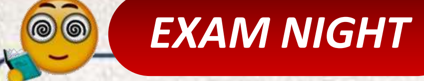
EXAM NIGHT | **Multiple choice questions**



If the concentration of K^+ ions in the pond water is 1.2×10^3 ion/liter. So, the concentration of these ions in the cellular sap of Nitella alga is ....ion/liter.

- 1.2×10^3
- 8×10^3
- 0.12×10^3
- 2.1×10^3



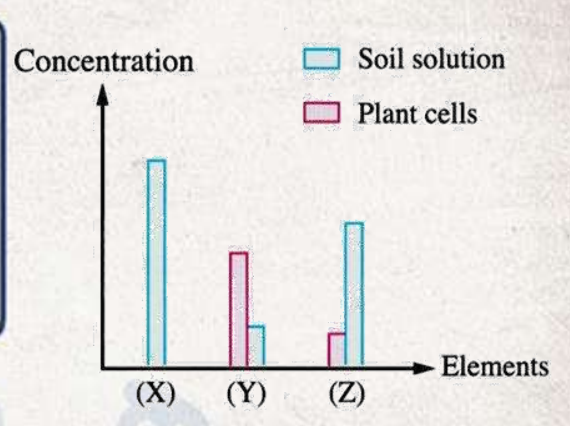


Multiple choice questions

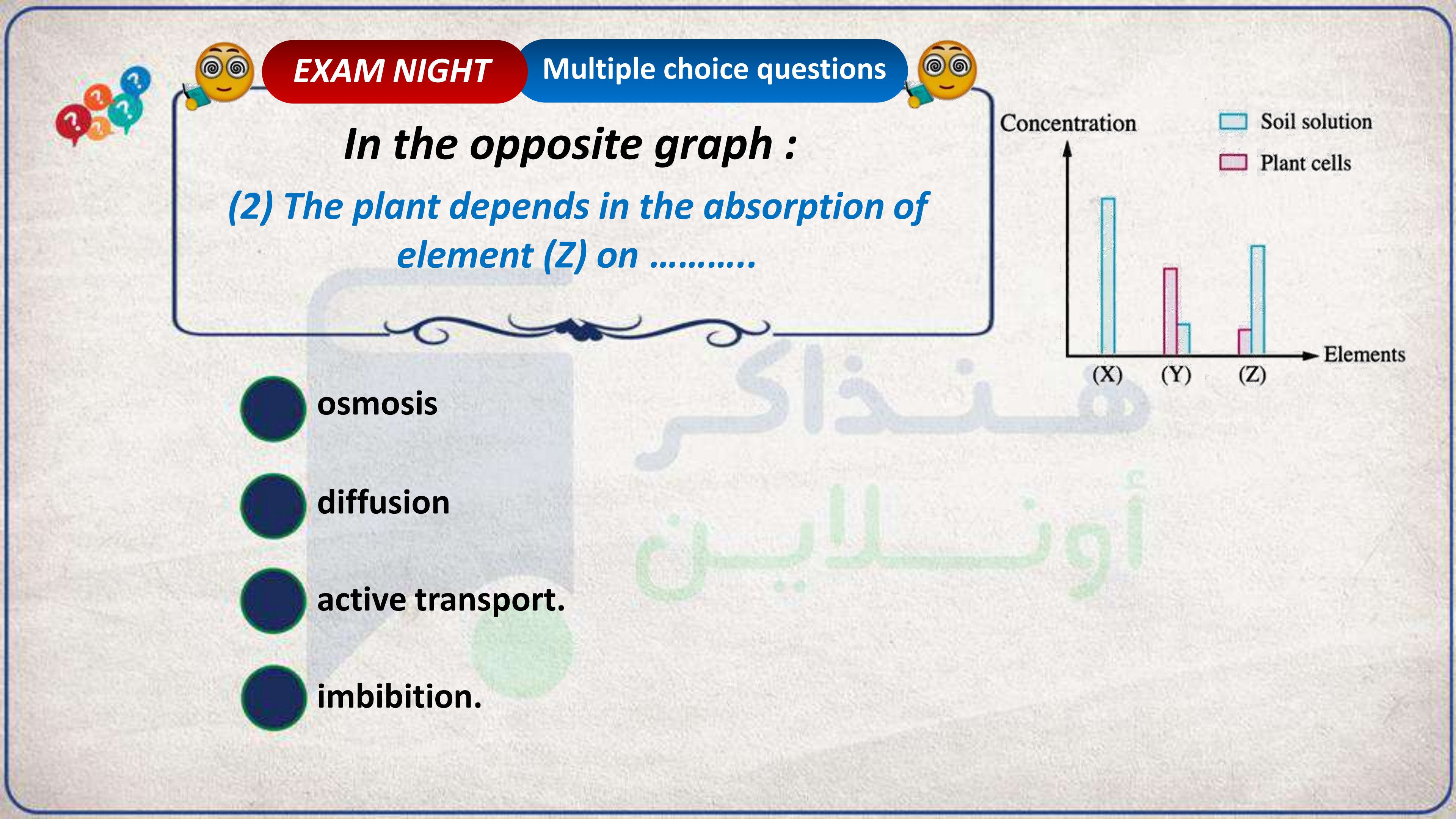


In the opposite graph :

(1) Element (X) is not absorbed, because ....



- its size is big.
- its concentration is very high in the soil.
- the plant doesn't need it.
- this element is from the micro-nutrients.


EXAM NIGHT
Multiple choice questions
In the opposite graph :
(2) The plant depends in the absorption of element (Z) on ....
osmosis
diffusion
active transport.
imbibition.
Concentration
Soil solution
Plant cells
Elements
(X)
(Y)
(Z)



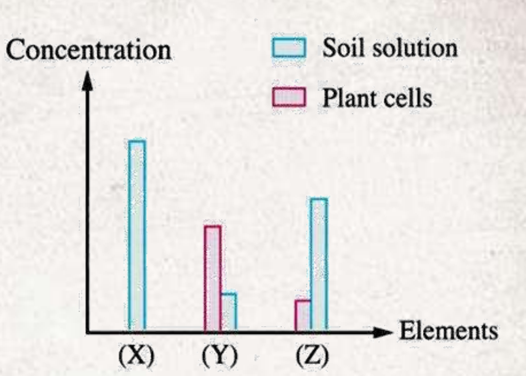
EXAM NIGHT

Multiple choice questions



In the opposite graph :

(3) The plant depends in the absorption of element (Y) on ……..



- osmosis
- diffusion
- active transport.
- imbibition.





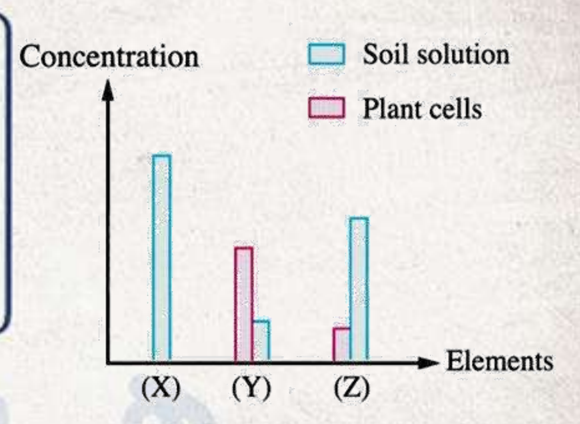
EXAM NIGHT

Multiple choice questions



In the opposite graph :

(4) If you know that in case of the absence of element (Y), photosynthesis process wouldn't occur. So, it is possible that element (Y) is .... element



- iron
- sulphur
- nitrogen
- calcium



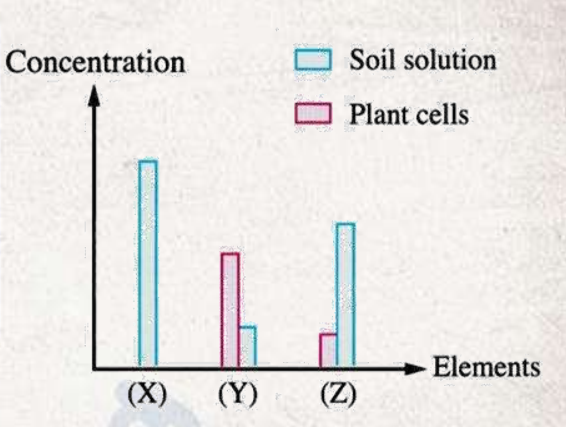
EXAM NIGHT

Multiple choice questions

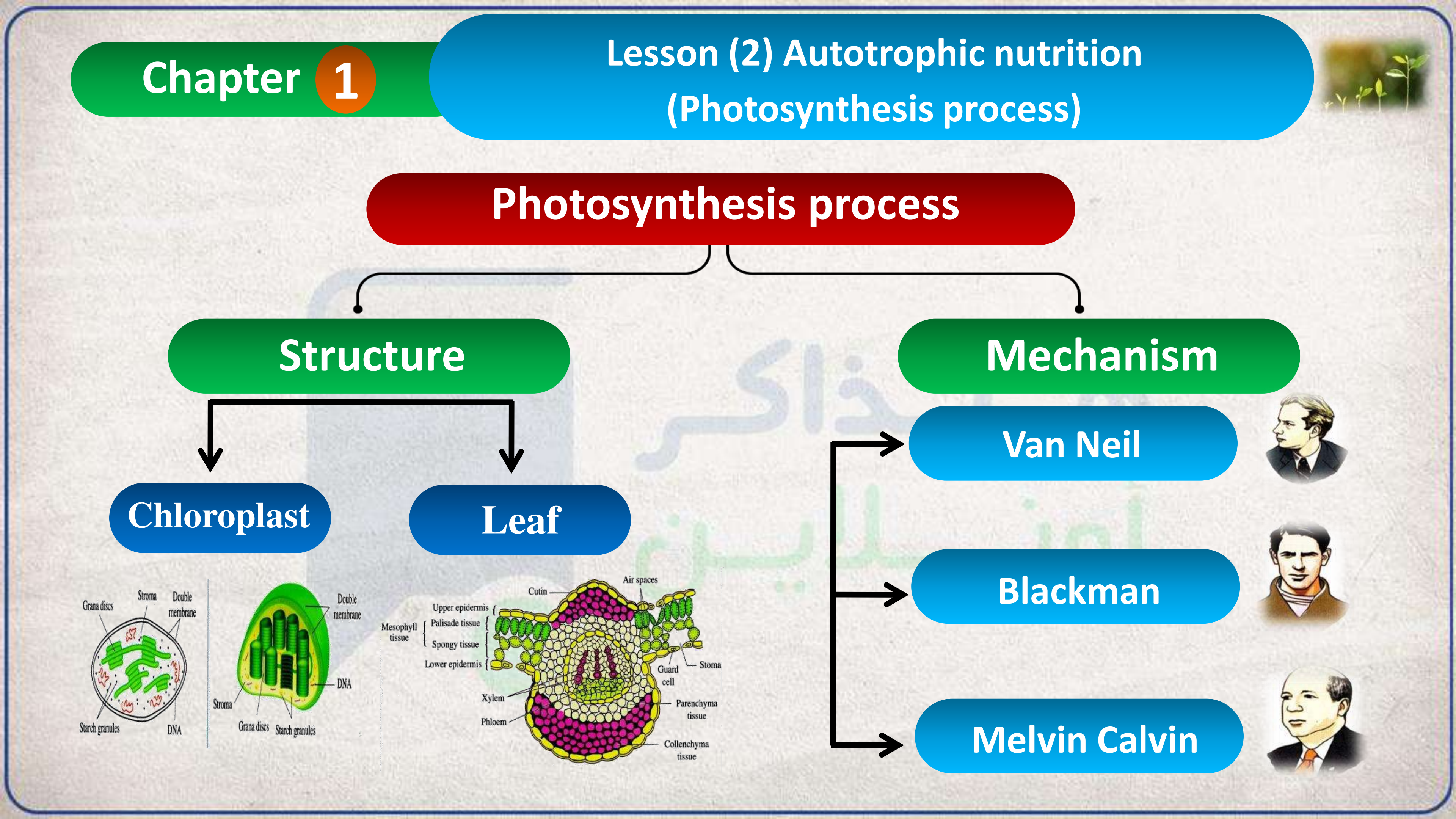


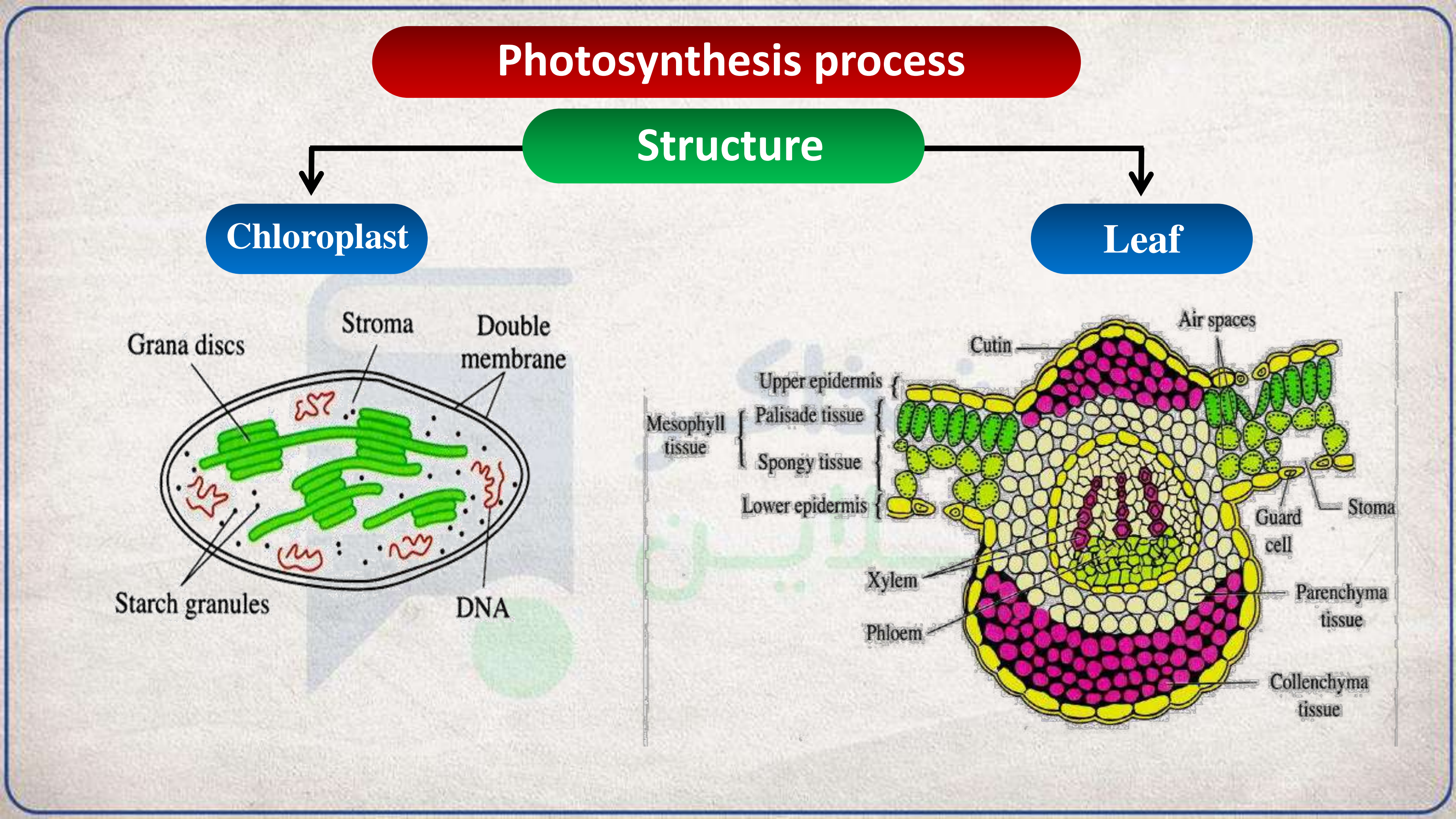
In the opposite graph :

(5) The presence of element (Y) in a higher concentration than that of element (Z) in the plant cells confirms that……………….



- the plant needs element (Y) more than element (Z).
- the absorption of the two elements is occurred by diffusion.
- the first element is absorbed by diffusion and the second is absorbed by active transport.
- the first element is absorbed by active transport and the second is absorbed by diffusion.


Chapter 1
Lesson (2) Autotrophic nutrition
(Photosynthesis process)
Photosynthesis process
Structure
Mechanism
Chloroplast
Leaf
Grana discs
Stroma
Double membrane
Starch granules
DNA
Stroma
Grana discs
Starch granules
Double membrane
DNA
Air spaces
Cutin
Upper epidermis
Palisade tissue
Mesophyll tissue
Spongy tissue
Lower epidermis
Guard cell
Stoma
Xylem
Phloem
Parenchyma tissue
Collenchyma tissue
Van Neil
Blackman
Melvin Calvin


Photosynthesis process
Structure
Chloroplast
Leaf
Stroma
Double membrane
Grana discs
Starch granules
DNA
Air spaces
Cutin
Upper epidermis
Mesophyll tissue
Palisade tissue
Spongy tissue
Lower epidermis
Guard cell
Stoma
Xylem
Phloem
Parenchyma tissue
Collenchyma tissue

Photosynthesis process | Mechanism



Van Neil

Source of oxygen evolved during photosynthesis process :

- ✓ The American scientist "Van Neil" was the first person who pointed out the source of oxygen evolved in the photosynthesis process through his studies to this process in the green and purple sulphur bacteria.

1. Green and purple sulphur bacteria

- **Van Neil assumed that :**

- Light decomposes hydrogen sulphide into hydrogen and **sulphur** in light reactions :

$$12H_2S \xrightarrow[\text{Bacteriochlorophyll}]{\text{Light energy}} 12H_2 + 12S\downarrow$$

- The resulted hydrogen reduces carbon dioxide into carbohydrates in dark reactions :

$$12H_2 + 6CO_2 \xrightarrow[\text{Bacteriochlorophyll}]{\text{Reduction}} C_6H_{12}O_6 + 6H_2O$$

So, the general chemical equation for photosynthesis in sulphur bacteria is

$$6CO_2 + 12H_2S \xrightarrow[\text{Bacteriochlorophyll}]{\text{Light energy}} C_6H_{12}O_6 + 6H_2O + 12S\downarrow$$

2. Green plants

- **Van Neil assumed that :**

- Light decomposes water into hydrogen and **oxygen** in light reactions :

$$12H_2O \xrightarrow[\text{Chlorophyll}]{\text{Light energy}} 12H_2 + 6O_2\uparrow$$

- The resulted hydrogen reduces carbon dioxide into carbohydrates in dark reactions :

$$12H_2 + 6CO_2 \xrightarrow[\text{Chlorophyll}]{\text{Reduction}} C_6H_{12}O_6 + 6H_2O$$

So, the general chemical equation for photosynthesis in green plants is

$$6CO_2 + 12H_2O \xrightarrow[\text{Chlorophyll}]{\text{Light energy}} C_6H_{12}O_6 + 6H_2O + 6O_2\uparrow$$

Confirming the theory of Van Neil

- **To confirm that water is the source of oxygen that evolved from the photosynthesis process :**

In 1941, a group of scientists at California university carried out experiments to verify the theory of "Van Neil", where they used the green *Chlorella* alga and provided it with all the suitable conditions for accomplishing the photosynthesis process.

	First experiment	Second experiment
Steps :	Using water contains oxygen isotope ^{18}O instead of ^{16}O	Using normal water with carbon dioxide contains ^{18}O isotope
Observations :	The evolved oxygen from photosynthesis is ^{18}O isotope.	The evolved oxygen from photosynthesis is normal oxygen ^{16}O
Equation of the reaction :	$6C^{16}O_2 + 12H_2{}^{18}O \xrightarrow[\text{Chlorophyll}]{\text{Light energy}} C_6H_{12}{}^{16}O_6 + 6H_2{}^{16}O + 6\,^{18}O_2 \uparrow$	$6C^{18}O_2 + 12H_2{}^{16}O \xrightarrow[\text{Chlorophyll}]{\text{Light energy}} C_6H_{12}{}^{18}O_6 + 6H_2{}^{18}O_6 + 6\,^{16}O_2 \uparrow$
Conclusion :	The source of the evolved oxygen from photosynthesis is water not carbon dioxide.	

Photosynthesis process

Mechanism

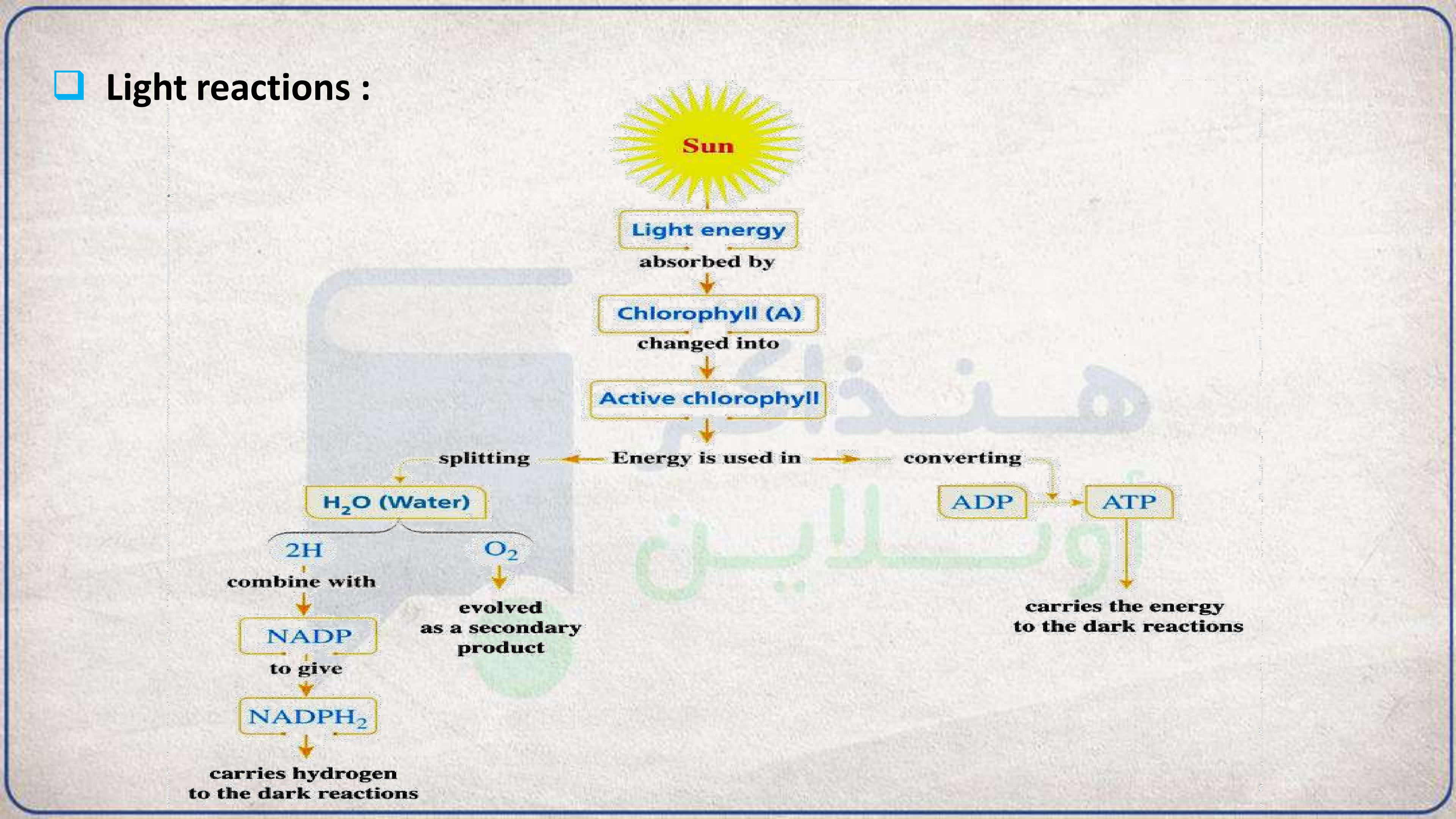


Blackman

Light and dark reactions of the photosynthesis process

- In 1905, “Blackman” explained through his studying experiments on the limiting factors for the photosynthesis rate, such as light, temperature and carbon dioxide, the photosynthesis process is divided into :
  - Light reactions (sensitive to light).
  - Dark reactions ”Enzymatic reactions” (sensitive to temperature).

Light reactions :

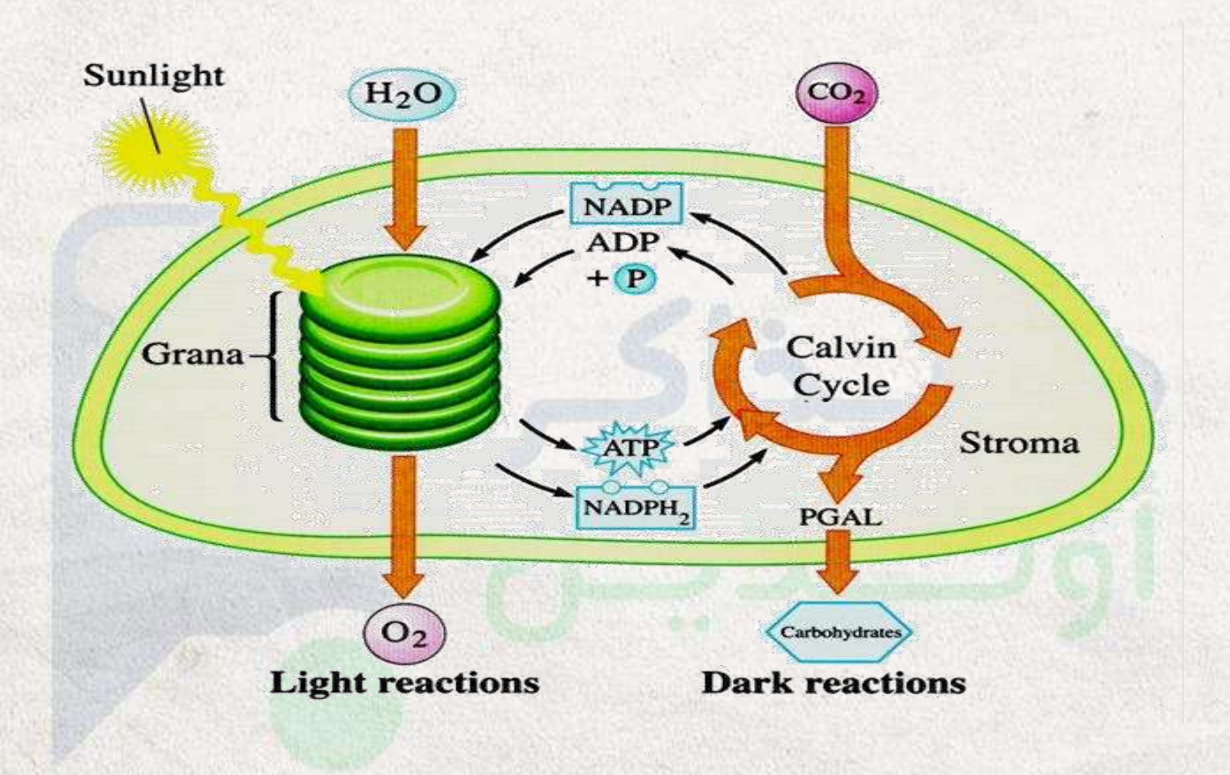




Melvin Calvin

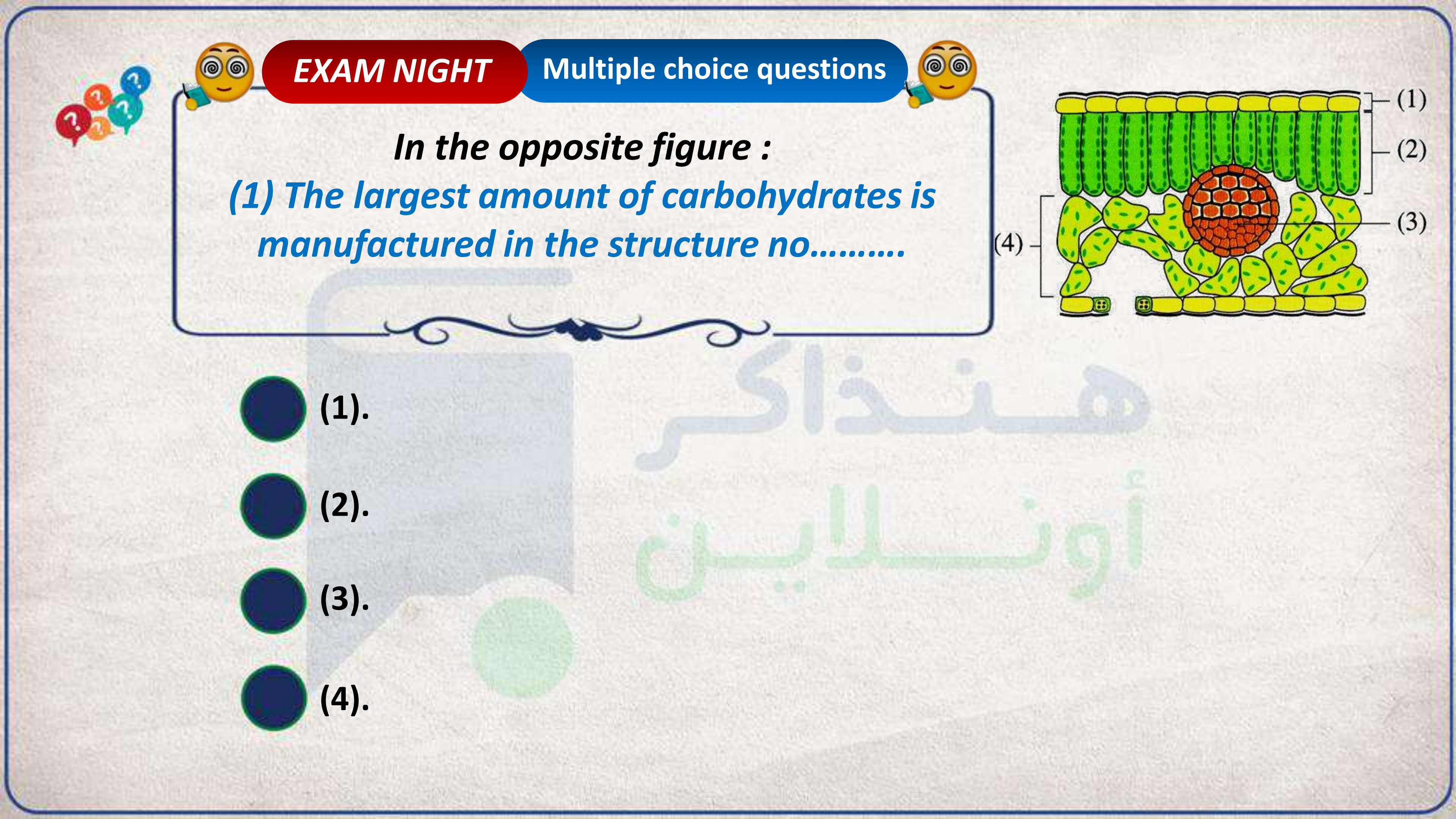
- "Melvin Calvin" and his associates at California university in 1949 revealed the nature of dark reactions by using the newly discovered radioactive isotope of carbon (^{14}C).

Photosynthesis process



• **Compare between the light and dark reactions, as follows :**

P.O.C.	Light reactions	Dark reactions
Location :	In grana.	In stroma (matrix of chloroplast).
The limiting factor :	Light	Temperature
What happens in this process :	Conversion of the kinetic energy of light into chemical potential energy in chlorophyll.	Fixation of CO_2 by its combination with hydrogen that is carried on $NADPH_2$ compound by the help of ATP
Products :	- Hydrogen combines with NADP, forming $NADPH_2$ - Oxygen gas (secondary product). - Energy stored in ATP molecule.	- PGAL compound that is used in building-up glucose, starch, proteins and lipids, also used as a high-energy compound in the cellular respiration. - Water.



In the opposite figure :

(1) The largest amount of carbohydrates is manufactured in the structure no……….

- (1).
- (2).
- (3).
- (4).

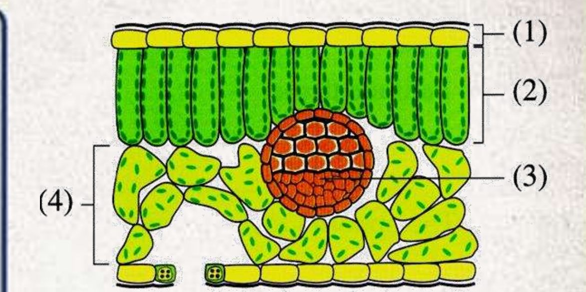


EXAM NIGHT | **Multiple choice questions**



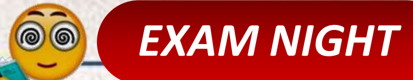
In the opposite figure :

(2) The highest concentration of the compounds that contain magnesium element is present in the tissue no ……….



- (1).
- (2).
- (3).
- (4).





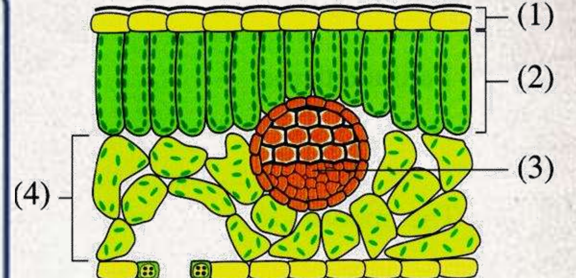
EXAM NIGHT

Multiple choice questions

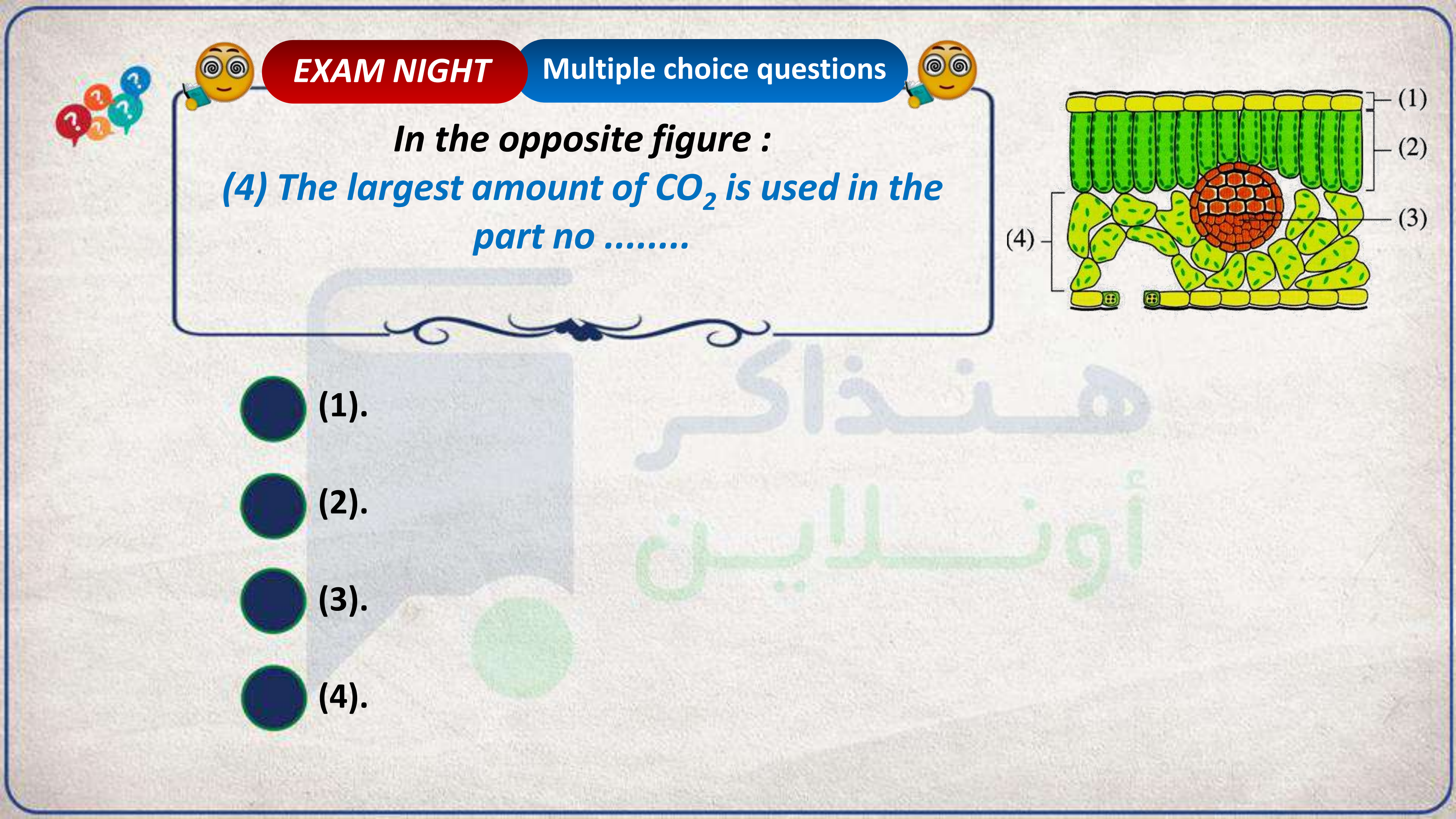


In the opposite figure :

(3) In which of the illustrated parts in the figure the photosynthesis process takes place?



- (1) and (4)
- (1) and (3).
- (2) and (4).
- (2) and (3).



EXAM NIGHT
Multiple choice questions
In the opposite figure :
(4) The largest amount of CO_2 is used in the part no ....
(1)
(2)
(3)
(4)
(1).
(2).
(3).
(4).





EXAM NIGHT Multiple choice questions



Which of the following symptoms appear on growing the plant in a soil poor in magnesium element ?

- Small leaves and many roots grow.
- Large leaves and few roots grow.
- The leaves are getting greener.
- The leaves are getting more yellow in colour .



EXAM NIGHT Multiple choice questions



The opposite table shows the number of chloroplasts in three types of cells in a dicotyledonous plant leaf, which of the following represents the correct number of chloroplasts ?

	Epidermis	Palisade layer	Spongy layer
(1)	Zero	17	6
(2)	6	Zero	17
(3)	17	6	Zero
(4)	17	6	17

(1).

(2).

(3).

(4).

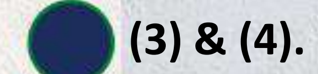



EXAM NIGHT **Multiple choice questions**

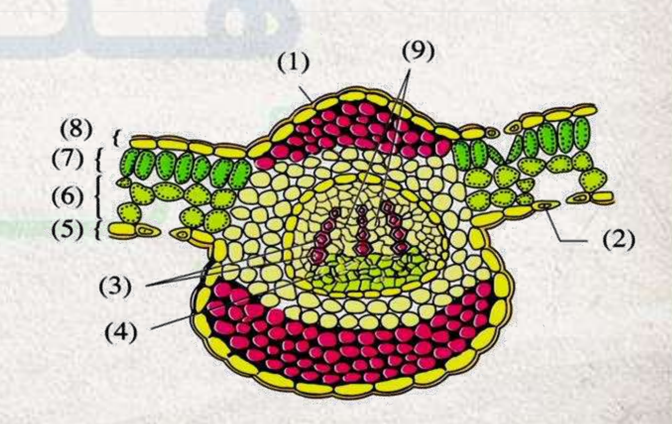


Study the following figure, then answer :

(1) Which of the following alternatives represents two different types of living and non-living cells which share in the formation of a compound tissue ?



- (3) & (4).
- (5) & (6).
- (3) & (9).
- (7) & (8).







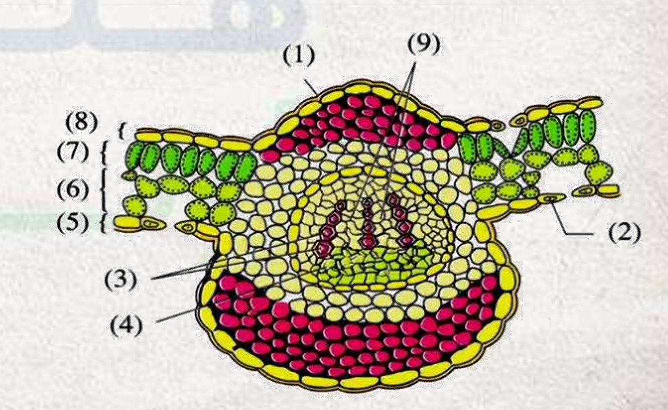
EXAM NIGHT **Multiple choice questions**



Study the following figure, then answer :

(2) The two similar types of cells which share in performing one function are ……..

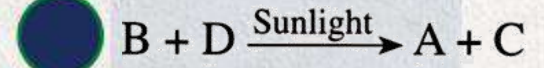
- (3) & (4).
- (5) & (6).
- (6) & (7).
- (7) & (8).



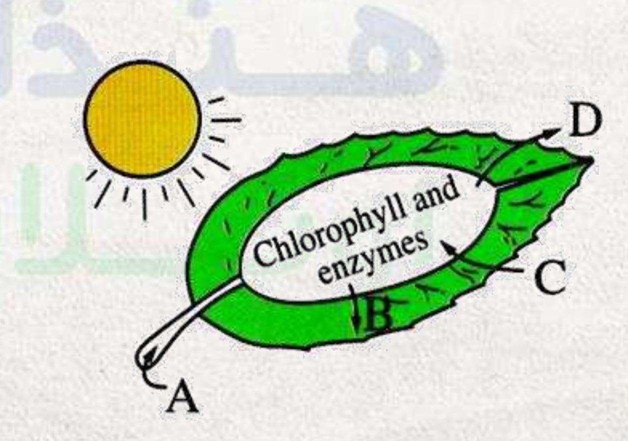


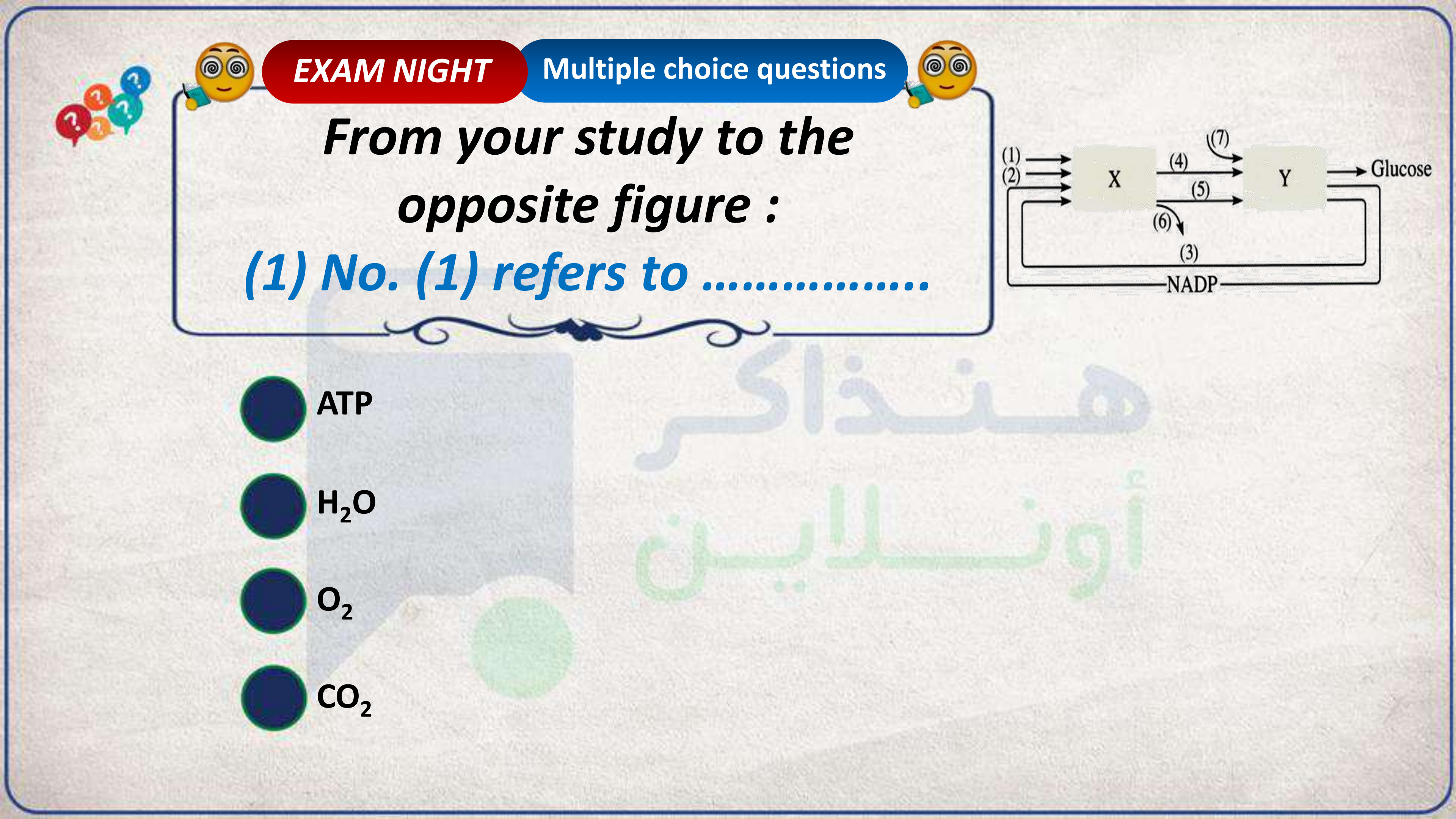
EXAM NIGHT **Multiple choice questions**

*Which of the following equations represents the **nutrition process** in the following figure?*



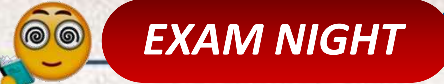
- A + C $\xrightarrow{\text{Sunlight}}$ B + D
- A + C $\xrightarrow{\text{Sunlight}}$ A + D
- A + B + D $\xrightarrow{\text{Sunlight}}$ B + C





EXAM NIGHT
Multiple choice questions
From your study to the opposite figure :
(1) No. (1) refers to ....
(1)
(2)
X
(4)
(5)
(6)
(7)
Y
Glucose
(3)
NADP
ATP
H_2O
O_2
CO_2



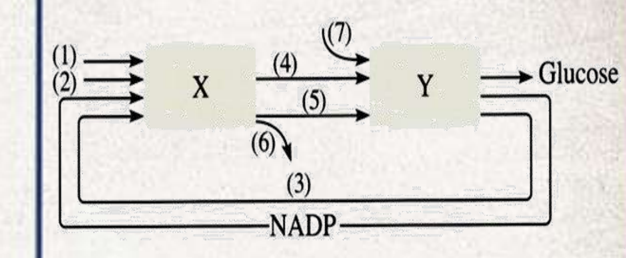


Multiple choice questions



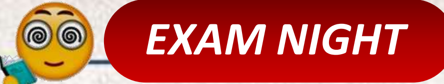
From your study to the opposite figure :

(2) No. (3) refers to ……………….



- $NADPH_2$
- ADP
- O_2
- electrons.



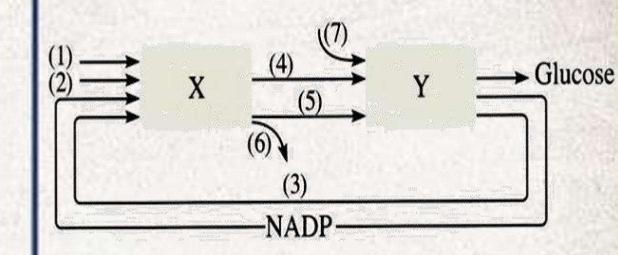


Multiple choice questions



From your study to the opposite figure :

(3) No. (4) expresses ……………



- $NADPH_2$
- ADP
- O_2
- electrons.

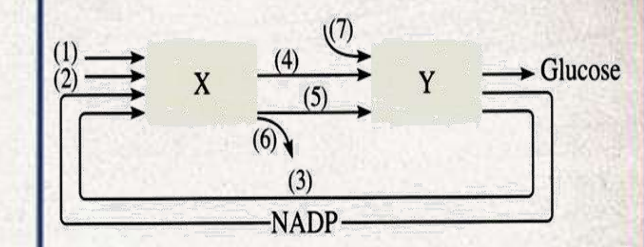


EXAM NIGHT Multiple choice questions

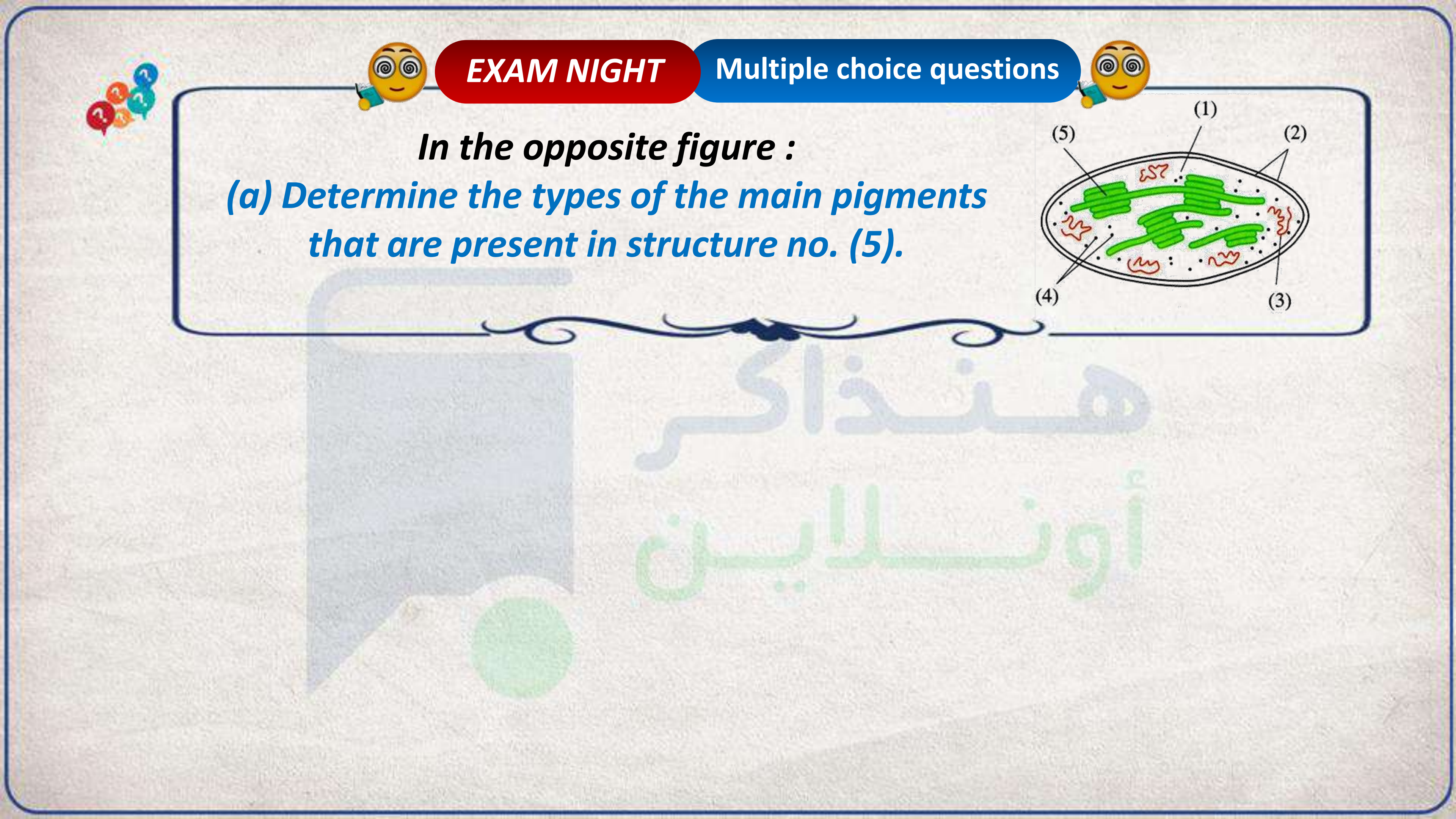


From your study to the opposite figure :

(4) Each of (X) and (Y) refers to ………. respectively.



- grana / stroma
- stroma / grana
- cytoplasm / grana
- stroma / cytoplasm


EXAM NIGHT
Multiple choice questions
In the opposite figure :
(a) Determine the types of the main pigments that are present in structure no. (5).
(1)
(2)
(3)
(4)
(5)





EXAM NIGHT

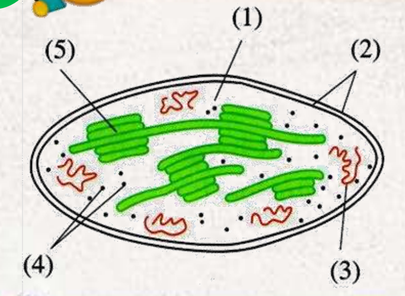
Essay questions



In the opposite figure :

(b) Mention the number and name of the structure that :

1. Is present also in the cell nucleus.







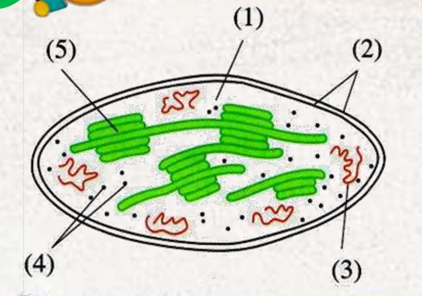
EXAM NIGHT Essay questions



In the opposite figure :

(c) Mention the number and name of the structure that :

2. Consists of colourless protein substance.







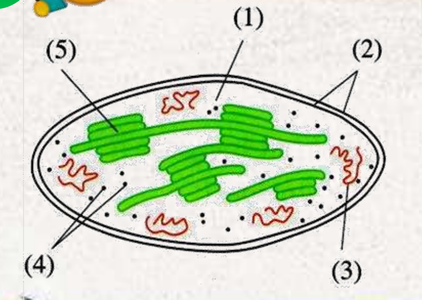
EXAM NIGHT **Essay questions**



In the opposite figure :

(c) Mention the number and name of the structure that :

3. May disappear under certain conditions..







EXAM NIGHT **Essay questions**

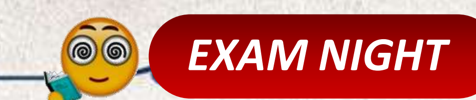


"Oxygen is always resulted from the photosynthesis process in the autotrophic organisms".

How far this statement is correct ? With explanation.





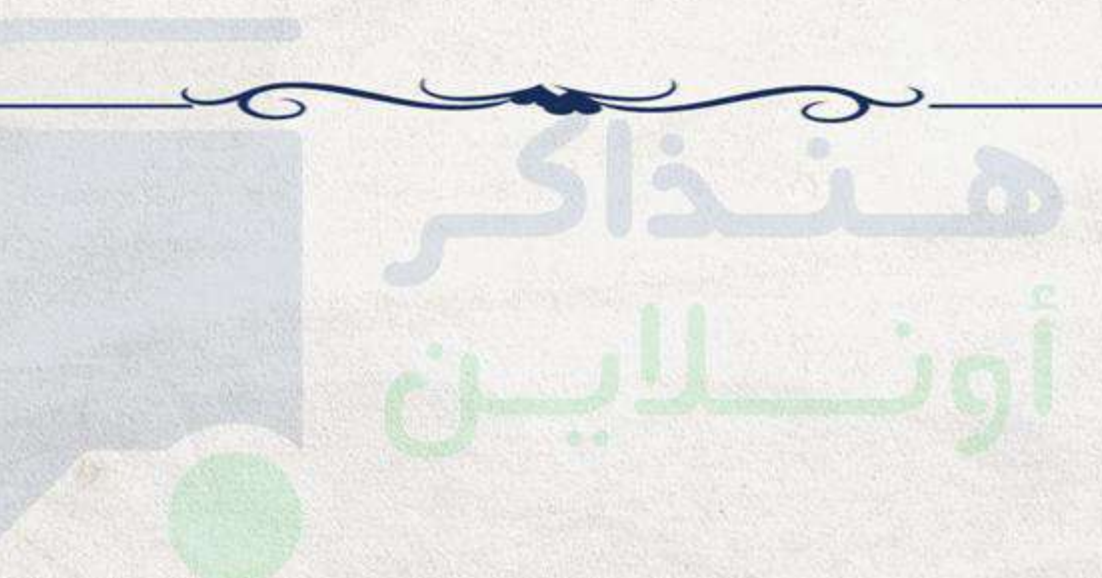


Essay questions

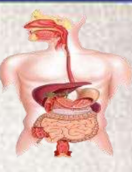


"All types of bacteria are autotrophic organisms".

How far this statement is correct ? With explanation.



Chapter 1 | Lesson (3) : Heterotrophic nutrition

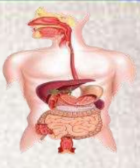


Digestion

- It is the process of converting the large food molecules (polymers) into smaller ones (monomers) by means of hydrolysis, and this process is catalyzed by enzymes.

The importance of digestion :

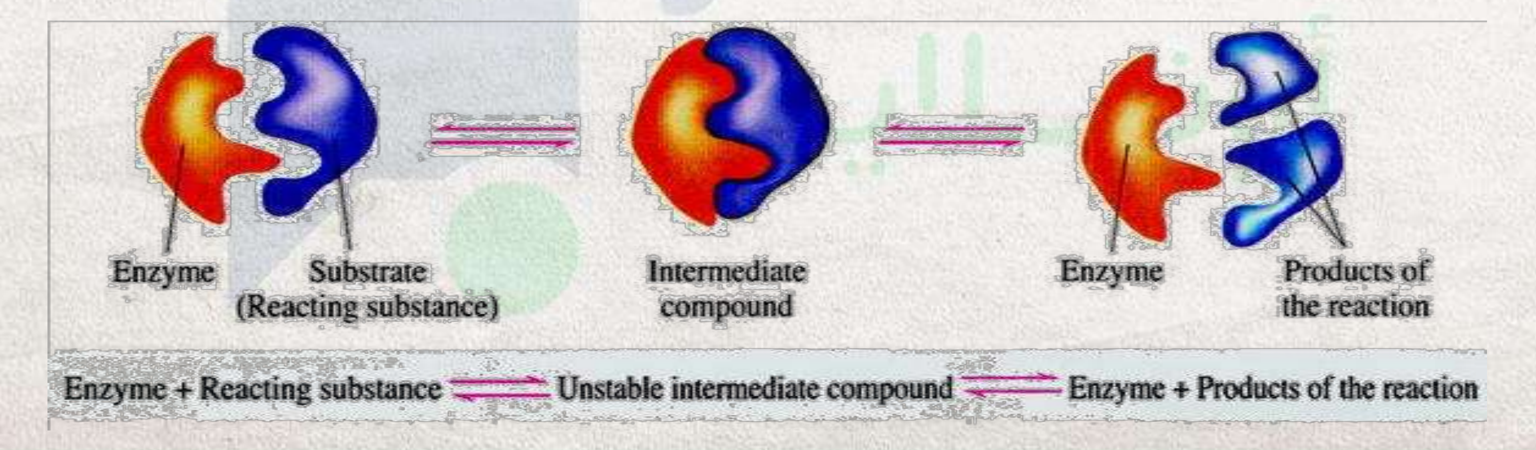
- The breaking down of the large and complex-structured food substances into simple structured and smaller-sized molecules which are easily absorbed by the cells (by diffusion or active transport), where the cells use them as a source of energy or to build new tissues and continue the growth.



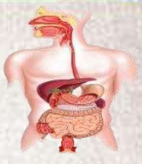
Enzyme:

- It is a protein substance which has the properties of catalysts, as it has the ability to activate a particular chemical reaction.

Mechanism of the enzyme action :



Chapter 1 | Lesson (3) : Heterotrophic nutrition



Digestion in man

Structure of the digestive system

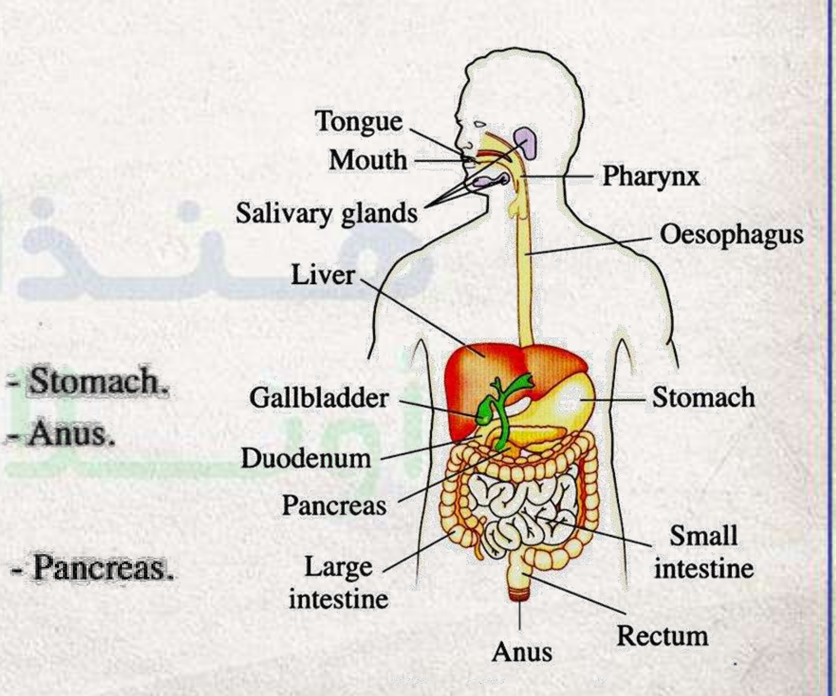
- The digestive system in man consists of :

1 Digestive (Alimentary) canal consists of :

- Mouth.
- Pharynx.
- Oesophagus.
- Stomach.
- Small intestine.
- Large intestine.
- Rectum.
- Anus.

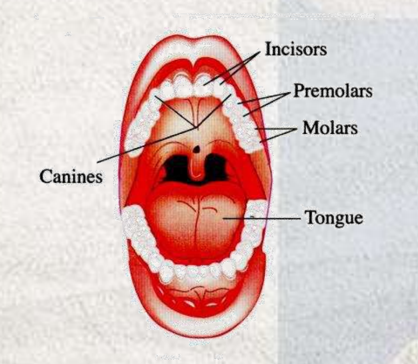
2 Accessory (Associated) glands, which are :

- Salivary glands.
- Liver.
- Pancreas.

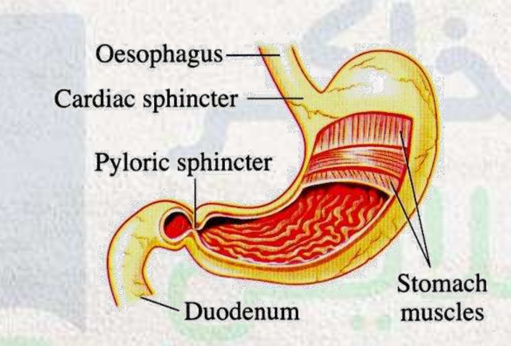


Stages of digestion

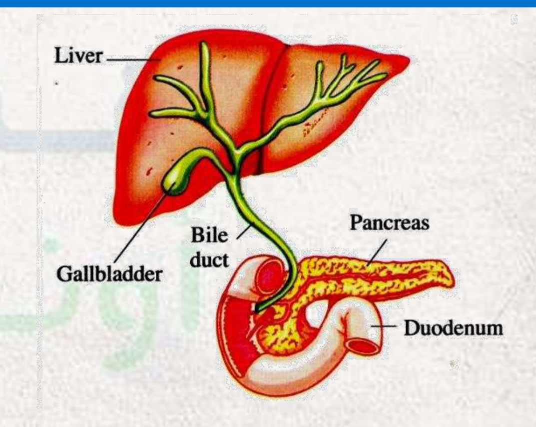
Buccal digestion



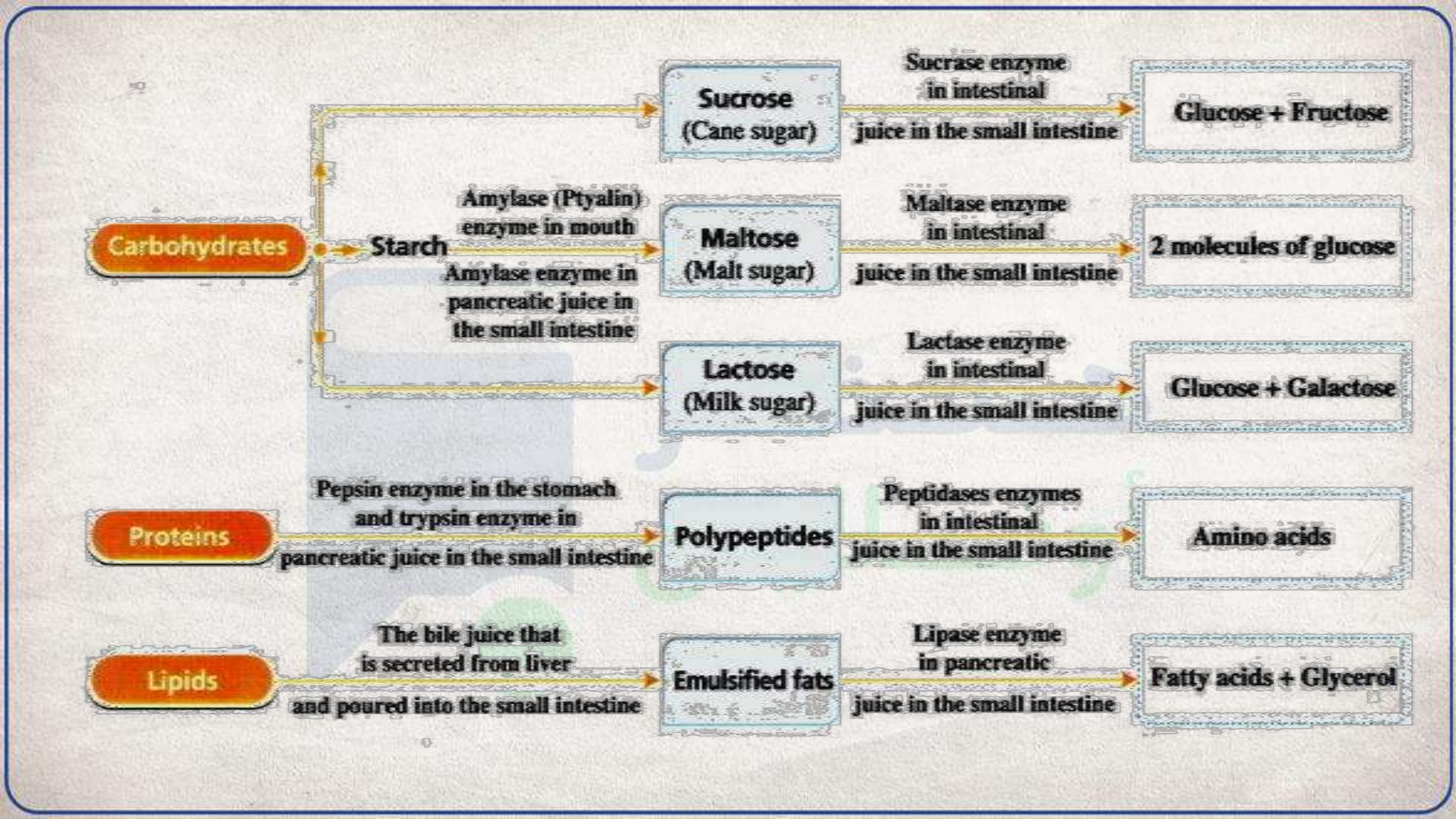
Gastric digestion



Intestinal digestion



The juice	The secretory organ	Site of action	Contents
Saliva :	Salivary glands.	Mouth	• Mucus. • Amylase (Ptyalin) enzyme.
Gastric juice :	Inner stomach wall.	Stomach cavity.	• Water. • HCl acid. • Pepsinogen enzyme.
Bile :	Liver	Duodenum	• Contains bile that is devoid of digestive enzymes.
Pancreatic juice :	Pancreas	Duodenum	• Sodium bicarbonate. • Pancreatic amylase enzyme. • Trypsinogen enzyme. • Lipase enzyme.
Intestinal juice :	Specialized cells in the small intestine wall.	Small intestine.	• Peptidases enzymes. • Maltase enzyme. • Sucrase enzyme. • Lactase enzyme. • Enterokinase enzyme.

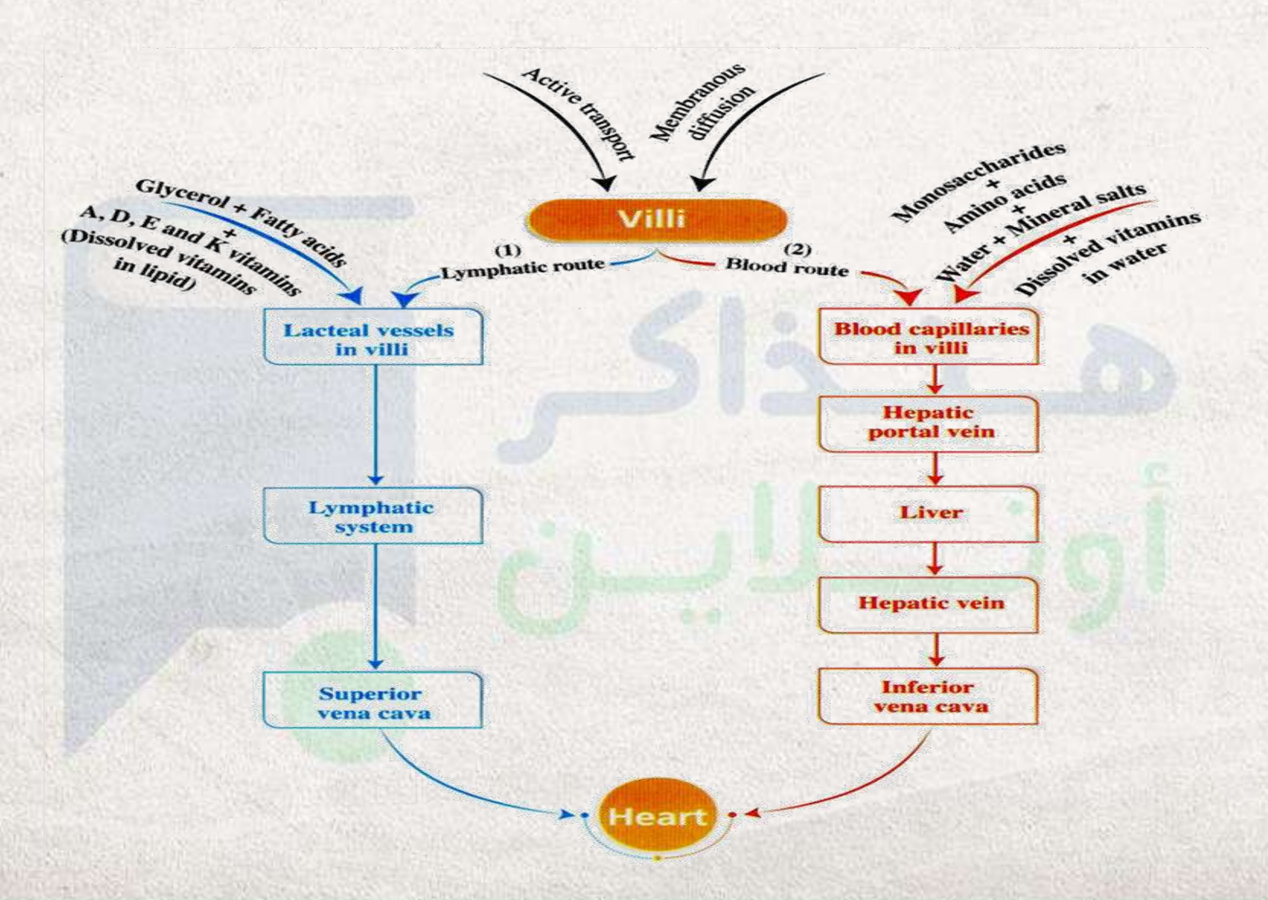

Carbohydrates
Starch
Amylase (Ptyalin) enzyme in mouth
Amylase enzyme in pancreatic juice in the small intestine
Sucrose (Cane sugar)
Sucrase enzyme in intestinal juice in the small intestine
Glucose + Fructose
Maltose (Malt sugar)
Maltase enzyme in intestinal juice in the small intestine
2 molecules of glucose
Lactose (Milk sugar)
Lactase enzyme in intestinal juice in the small intestine
Glucose + Galactose
Proteins
Pepsin enzyme in the stomach and trypsin enzyme in pancreatic juice in the small intestine
Polypeptides
Peptidases enzymes in intestinal juice in the small intestine
Amino acids
Lipids
The bile juice that is secreted from liver and poured into the small intestine
Emulsified fats
Lipase enzyme in pancreatic juice in the small intestine
Fatty acids + Glycerol

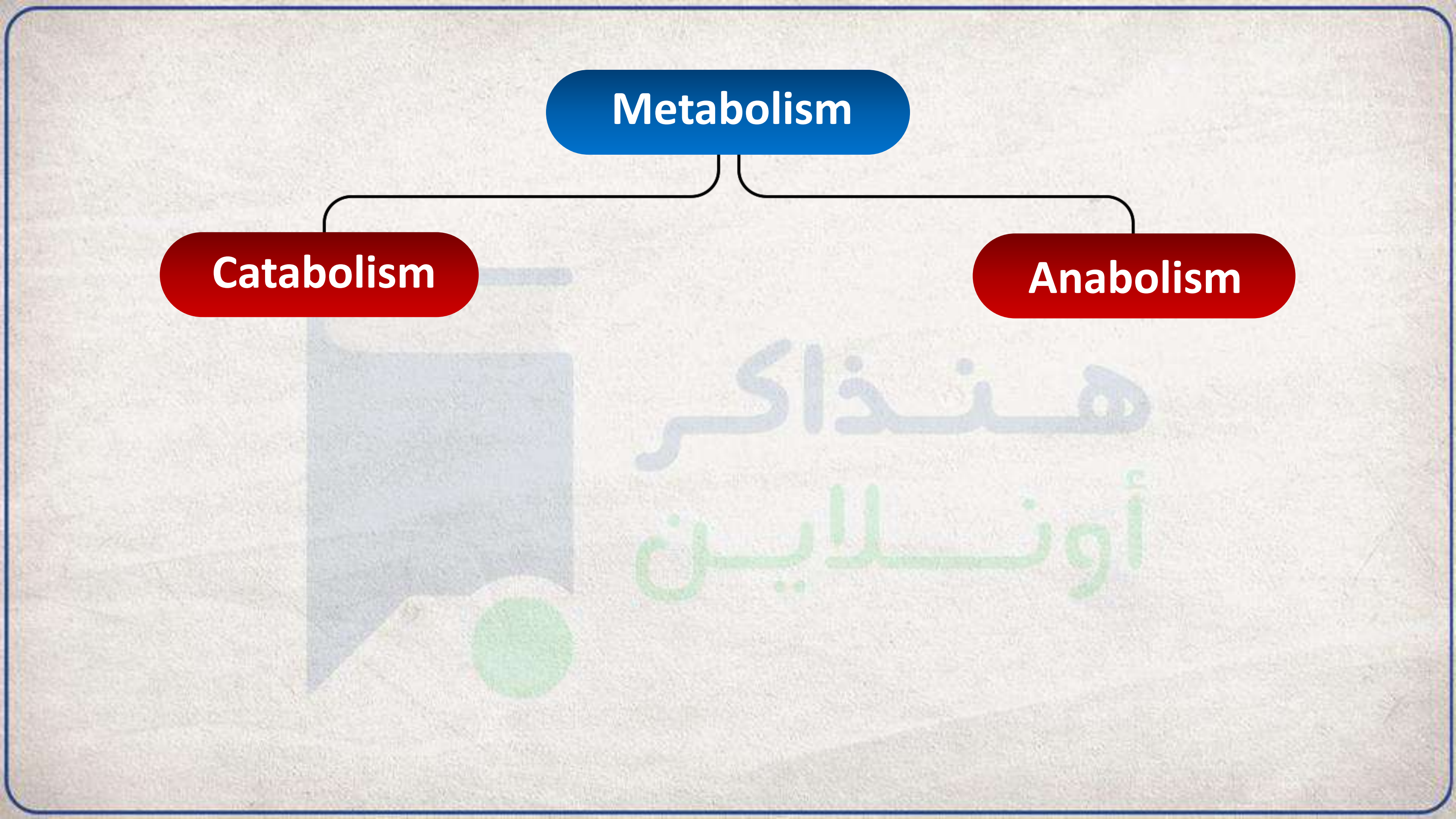
Absorption of digested food



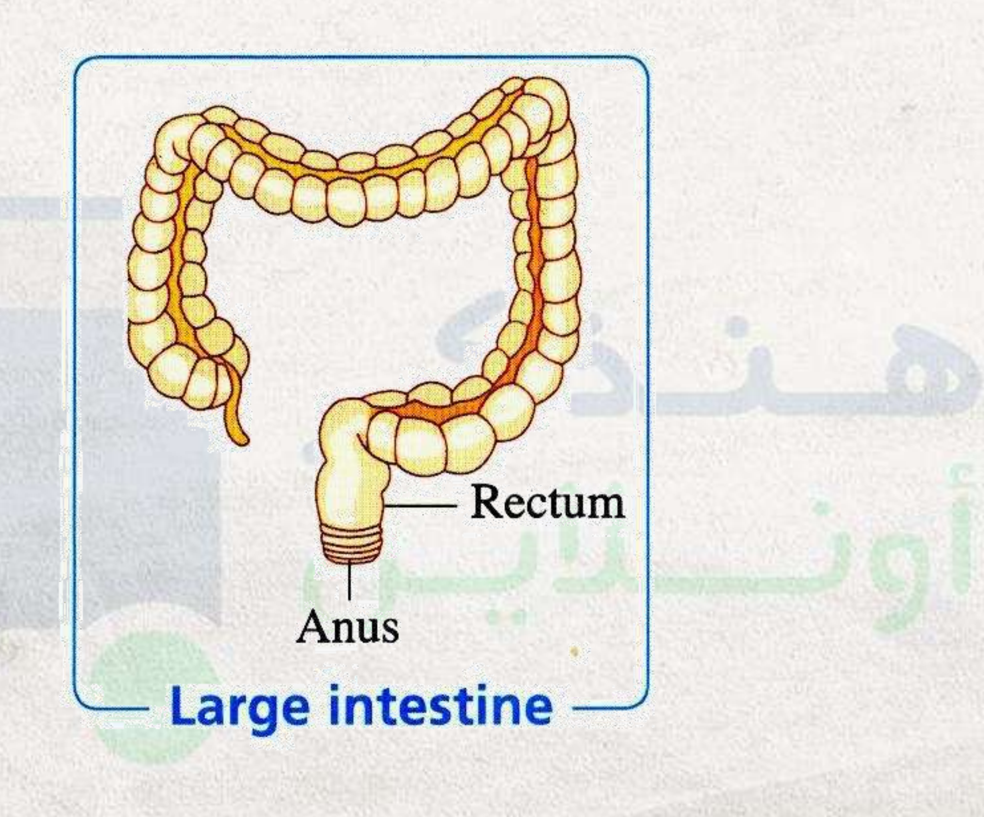
Muscles
Villi
Intestinal wall
Epithelial layer
Villi
Lacteal vessel
Artery
Vein
Lymphatic vessel

◎ The following diagram illustrates the routes of the absorbed food substances in villus :




Metabolism
Catabolism
Anabolism

Large intestine and defecation







EXAM NIGHT **Multiple choice questions**



The first compound resulted from the digestion of carbohydrates in human is ……..

- glucose.
- maltose.
- sucrose.
- lactose.





EXAM NIGHT

Multiple choice questions



On eating a piece of bread, which of the following enzymes will start its action first ?

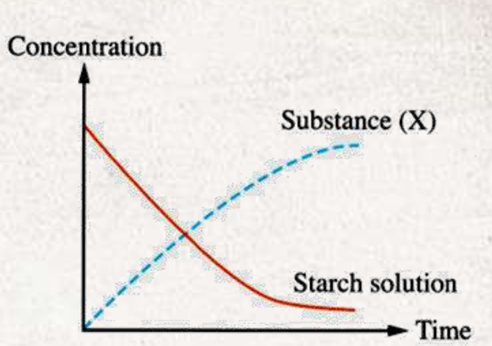
- **Trypsin.**
- **Peptidase.**
- **Amylase.**
- **Lipase.**



EXAM NIGHT **Multiple choice questions**



The opposite graph illustrates the production of substance (X), when the enzyme works on a starch solution. So, substance (X) is ……….



- lactose.
- sucrose.
- glucose.
- maltose.





EXAM NIGHT | **Multiple choice questions**



Which tube in the two following figures contains the highest content of maltose after 20 minutes from the beginning of the experiment ?

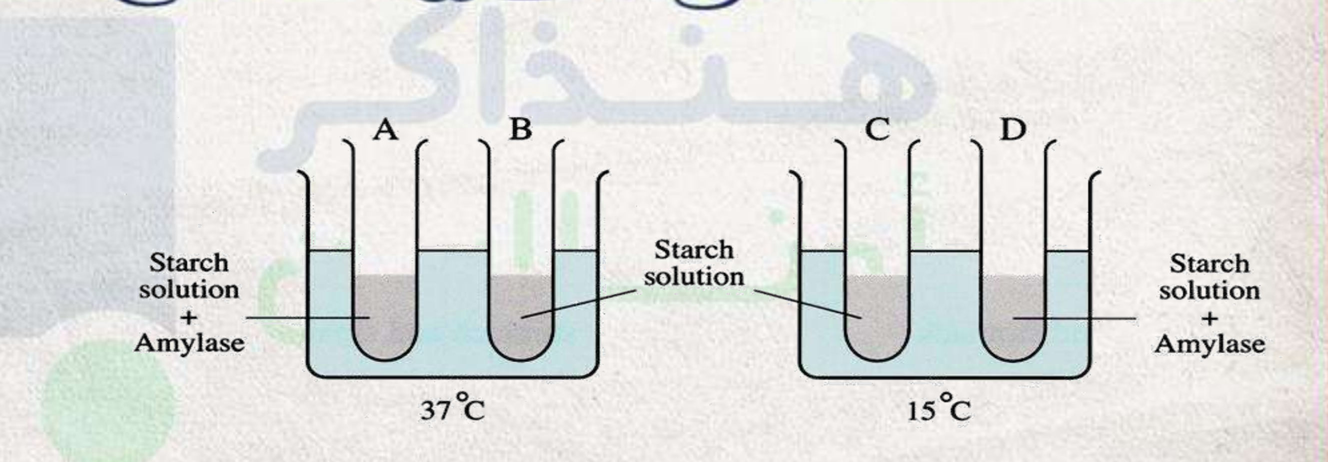


(A).

(B).

(C).

(D).







EXAM NIGHT

Multiple choice questions

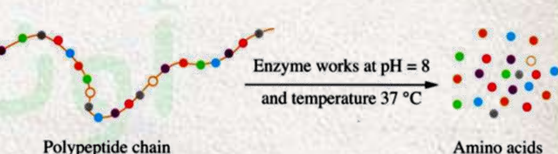


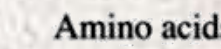
The following figure shows the effect of an enzyme that works in the human digestive canal, which of the following decreases the production rate of amino acids ?



- The removal of the produced amino acids when formed.
- Increasing the amount of polypeptide chains
- The stability of the temperature at 37° C.
- Decreasing the pH value to 2







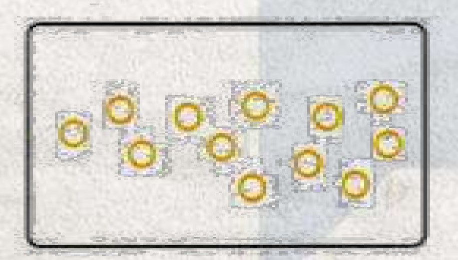
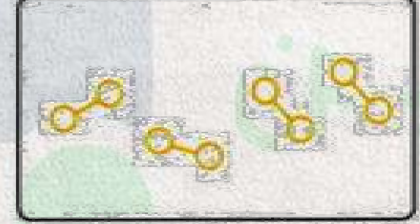
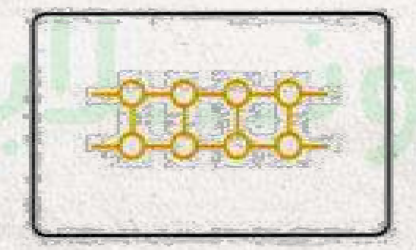
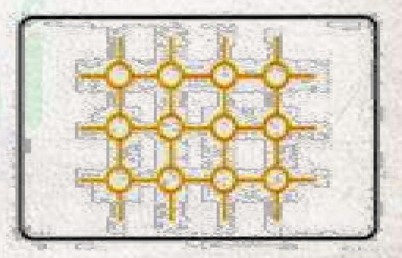



EXAM NIGHT

Multiple choice questions



Which of the following figures illustrates a starch molecule, after being digested in the mouth ?













EXAM NIGHT

Multiple choice questions



The action of salivary amylase enzyme is stopped in the stomach, due to ……..

- the decrease In the enzyme amount.
- changing all carbohydrates into maltose sugar.
- the difference in pH
- the difference in temperature.




EXAM NIGHT | **Multiple choice questions**



All the following enzymes digest the same type of food substances, except ……….

- maltase.
- lipase.
- sucrase.
- lactase.



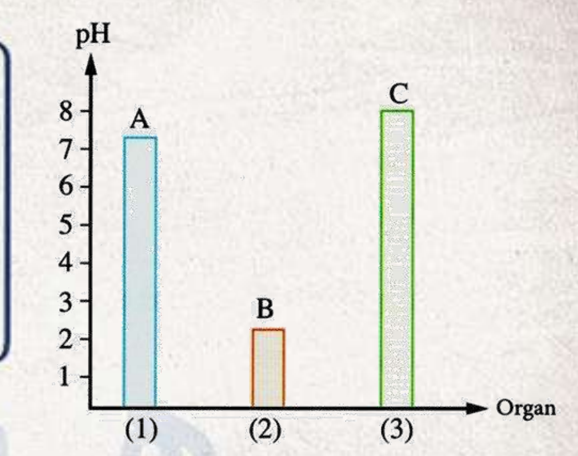
EXAM NIGHT

Multiple choice questions



Study the opposite graph, then answer :

(1) If you know that enzyme (C) has an indirect role in the digestion process and the action of enzyme (1), (2) and (3) are .... respectively.

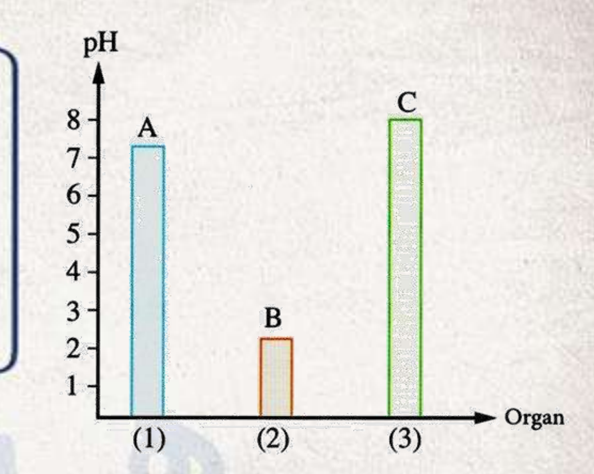


- stomach / small intestine / mouth
- mouth / stomach / pancreas
- mouth / stomach / small intestine
- small intestine / stomach / mouth



EXAM NIGHT **Multiple choice questions**

Study the opposite graph, then answer :



(2) Which of the following activates enzyme (B) ?

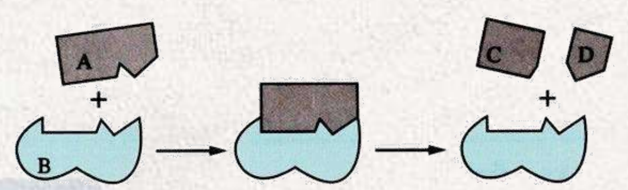
- HCl acid.
- Sodium bicarbonate.
- Enterokinase enzyme.
- Ptyalin enzyme.



EXAM NIGHT **Multiple choice questions**



The following diagram illustrates the action of a digestive enzyme :



If (D) is a fructose molecule. What do (A), (B) and (C) represent ?



(A).



(B).

(C).

(D).

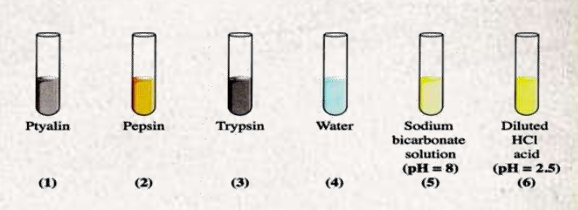
	A	B	C
a	Sucrase enzyme	Sucrose molecule	Glucose molecule
b	Sucrose molecule	Glucose molecule	Sucrase enzyme
c	Glucose molecule	Sucrase enzyme	Sucrose molecule
d	Sucrose molecule	Sucrase enzyme	Glucose molecule



EXAM NIGHT | Multiple choice questions



Which of the following tubes can be used together to form two different solutions that digest the egg white?



(A).

(B).

(C).

(D).

	The first solution	The second solution
a	(2) + (4)	(3) + (5)
b	(1) + (4) + (5)	(2) + (4) + (6)
c	(2) + (4) + (6)	(3) + (4) + (5)
d	(3) + (4) + (5)	(1) + (4) + (6)





EXAM NIGHT | **Multiple choice questions**



Which of the following food substances take a different way in its absorption ?

- Egg white.
- Butter.
- Honey.
- Bread.





EXAM NIGHT

Multiple choice questions



The absorption process of some products of digestion by villi is called active transport process, due to ....

- **the conversion of the large food molecules into small-sized molecules.**
- **the hydrolysis process that depends on enzymes.**
- **the need to an amount of energy to be absorbed.**
- **its transfer to the bloodstream.**



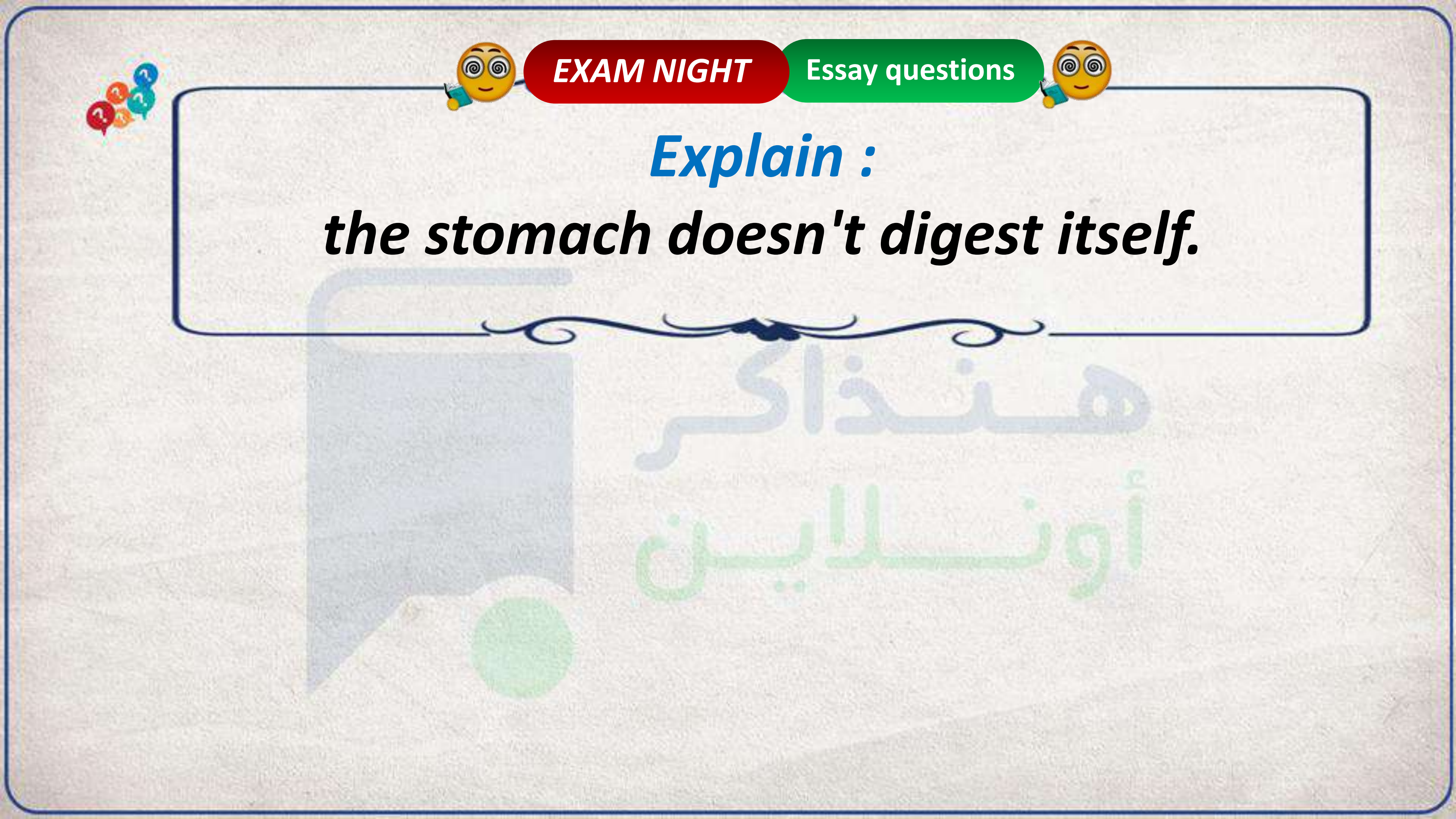


EXAM NIGHT | **Multiple choice questions**



The process by which the absorbed food becomes a part of the body is called ....

- anabolism.
- catabolism.
- digestion.
- absorption.


EXAM NIGHT
Essay questions
Explain :
the stomach doesn't digest itself.
هنذاكر
أونلاين







What is the similarity between :

enterokinase enzyme and HCl acid ?







EXAM NIGHT

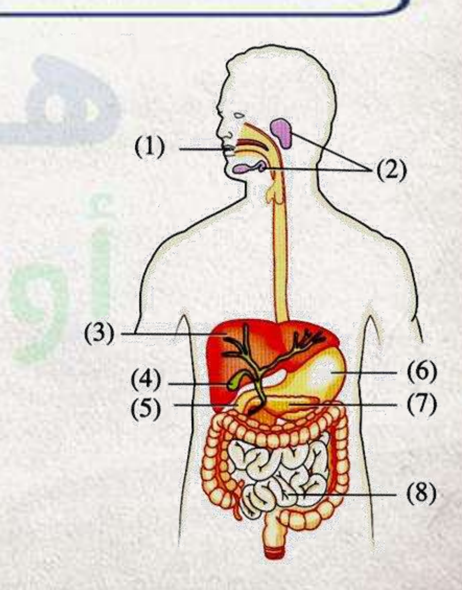
Essay questions



The opposite figure illustrates a diagram for the digestive system structure :

(a) Write the number and name of the organ that :

(1) Secretes the protein digestive enzymes.






EXAM NIGHT

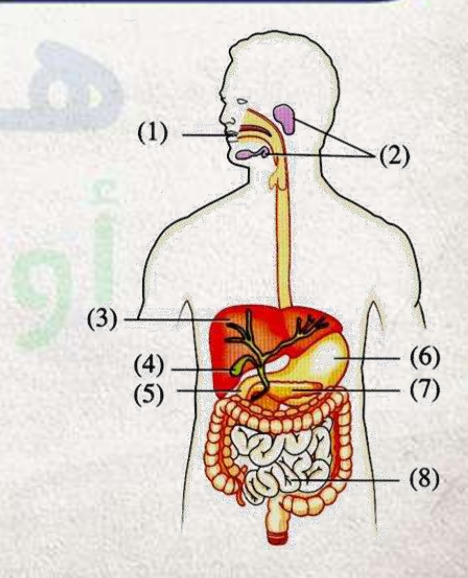
Essay questions



The opposite figure illustrates a diagram for the digestive system structure :

(a) Write the number and name of the organ that :

(2) Doesn't secrete any digestive enzymes.






EXAM NIGHT

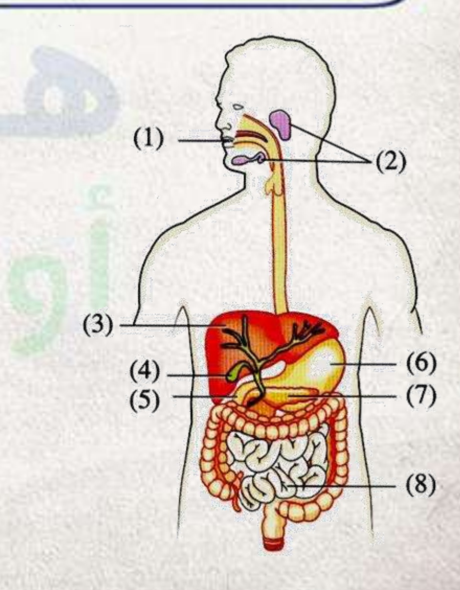
Essay questions



The opposite figure illustrates a diagram for the digestive system structure :

(a) Write the number and name of the organ that :

(3) Secretes amylase enzyme.





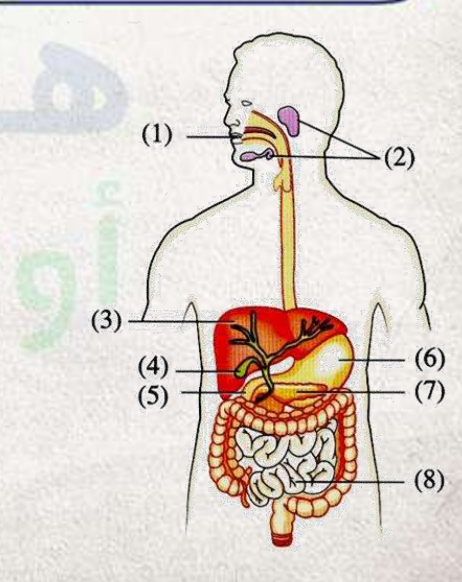

EXAM NIGHT **Essay questions**



The opposite figure illustrates a diagram for the digestive system structure :

(a) Write the number and name of the organ that :

(4) The digestion of carbohydrates occurs inside it.







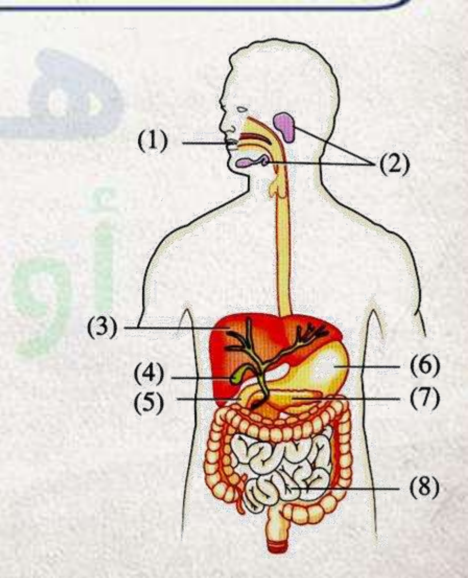
EXAM NIGHT

Essay questions



The opposite figure illustrates a diagram for the digestive system structure :

(b) What is the function of the liquid that is produced by part no. (7) and secreted in part no. (5) ?





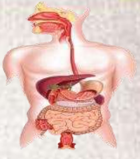




What is the difference between :

the lining of ileum and the lining of large intestine ?

Chapter 2 | Lesson (1) : Transport in plant



Transport in lower (primitive) plants :

Transport in higher plants :

Structure of the plant stem

Epidermis
Cortex
Vascular bundle
Pith
Cutin
Epidermis
Collenchyma cells
Starch sheath
Medullary rays
Pith
Epidermis
Cortex
Parenchyma cells
Pericycle
Phloem
Cambium
Secondary xylem (Metaxylem)
Xylem parenchyma
Primary xylem (Protoxylem)
Vascular cylinder
Vascular bundle

Mechanism of transport in higher plants

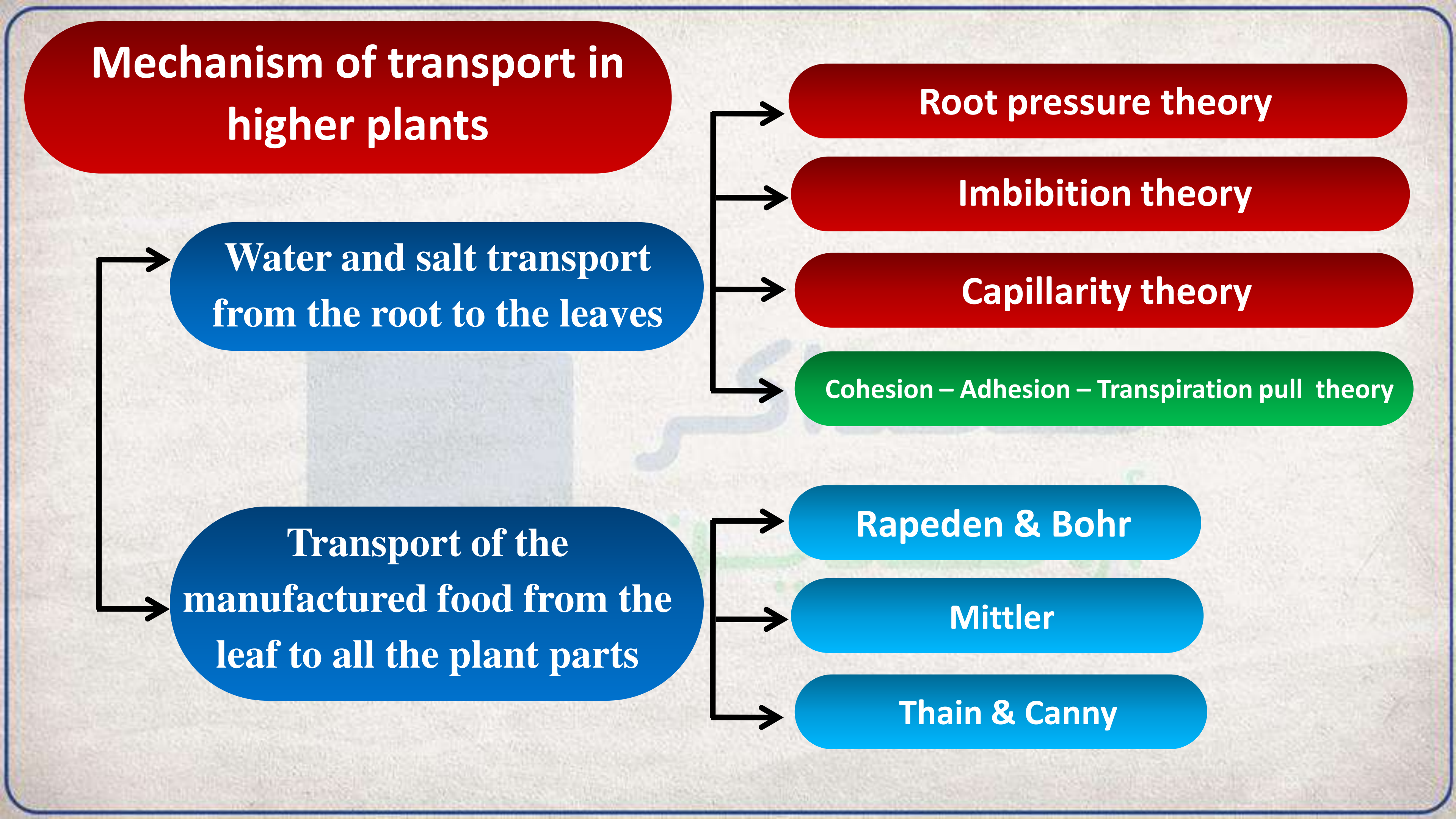
- Water and salt transport from the root to the leaves
- Transport of the manufactured food from the leaf to all the plant parts

Structure of the plant stem

Epidermis
Cortex
Vascular bundle
Pith
Cutin
Epidermis
Collenchyma cells
Epidermis
Cortex
Parenchyma cells
Pericycle
Starch sheath
Phloem
Cambium
Secondary xylem (Metaxylem)
Vascular cylinder
Vascular bundle
Xylem parenchyma
Medullary rays
Primary xylem (Protoxylem)
Pith

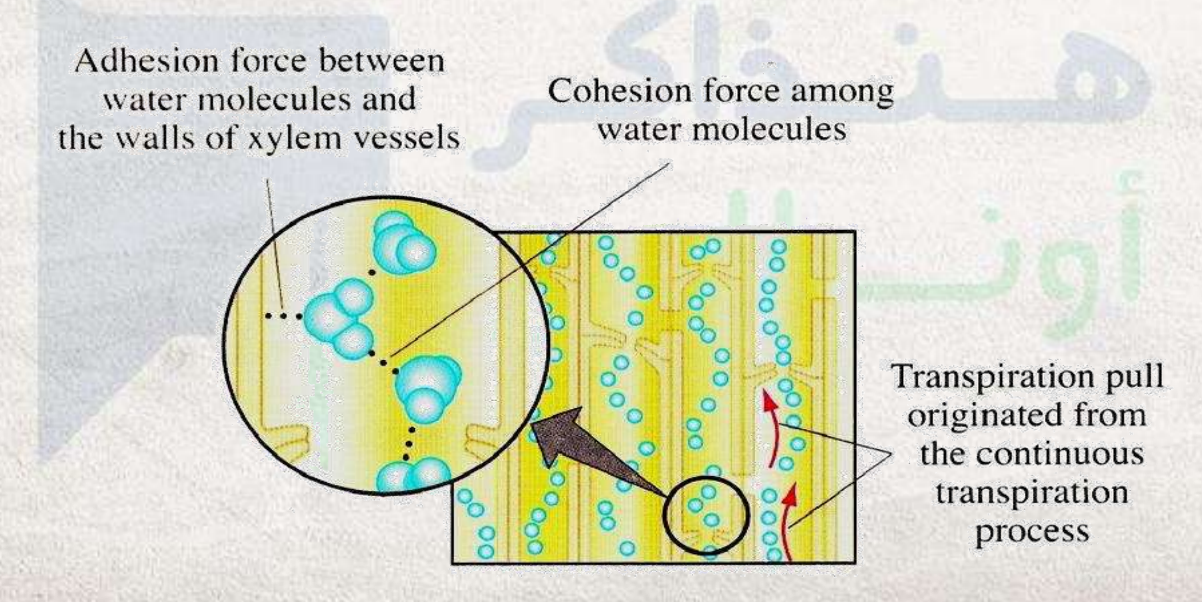
Sieve tubes
Sieve plate (sieve barrier)
Cytoplasmic strands
Companion cell
Nucleus
Companion cell
Sieve plate

Pits
Pits
Tracheid
Vessel


Mechanism of transport in higher plants
Water and salt transport from the root to the leaves
Root pressure theory
Imbibition theory
Capillarity theory
Cohesion – Adhesion – Transpiration pull theory
Transport of the manufactured food from the leaf to all the plant parts
Rapeden & Bohr
Mittler
Thain & Canny

Cohesion – Adhesion – Transpiration pull theory :

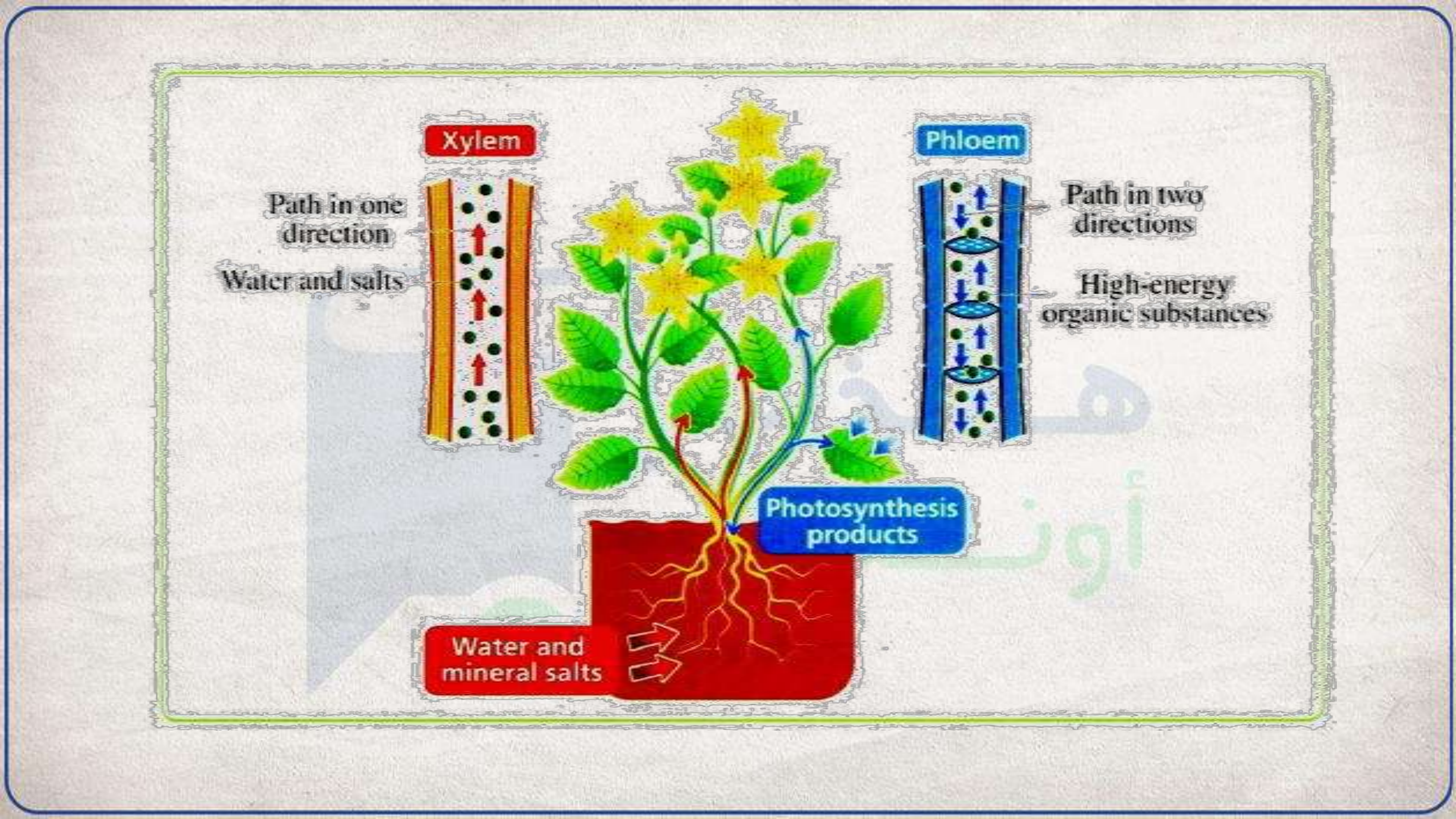
❖ The two scientists H.H. Dixon and J. Joly in 1895 established the principles of the cohesion – adhesion – transpiration pull theory, where they proved that " water is pulled by the leaf, due to the consumption of water in the metabolic processes, transpiration and evaporation in leaves ".



Cohesion – Adhesion – Transpiration pull theory :

❖ The theory is summarized in that the water column rises in the xylem vessels depending upon three forces , as shown in the following table :

The force	The evidence on the presence of this force	The conditions needed for water to have a high pulling force in the xylem vessels
(1) Cohesion force between the molecules of water inside the xylem vessels and tracheids.	The presence of a continuous column of water inside the vessels.	The tubes must be free of any gases or air bubbles to avoid the break and descend of the water column.
(2) Adhesion force between the water molecules and the walls of xylem vessels.	Water column is held continuously against the effect of gravity.	• Walls of the tubes must possess an adhesion force to attract water (colloidal nature). • Tubes must be capillary
(3) Transpiration pull which is originated from the continuous transpiration in the leaves.	The presence of continuous attraction of water column upward.	


Xylem
Path in one direction
Water and salts
Phloem
Path in two directions
High-energy organic substances
Photosynthesis products
Water and mineral salts





EXAM NIGHT **Multiple choice questions**



Chlamydomonas alga shares Spirogyra alga in that each of them ……………

- contains specialized transport tissues.
- transfers gases to it from the surrounding medium by diffusion.
- transfers the digested food substances through it by active transport.
- transfers gases and digested food substances through it by diffusion and active transport.





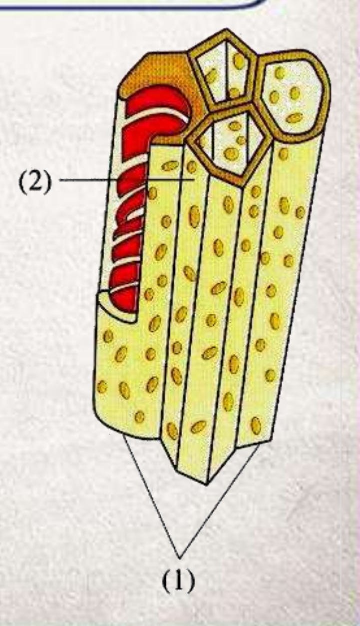
EXAM NIGHT **Multiple choice questions**



The following figure shows a group of cells that are adapted to perform a certain function :

(1) Cells no. (1) and (2) represent ……….. respectively.

- vessels and tracheids
- sieve tubes and companion cells
- epidermal cells and cortex cells
- sclerenchyma cells and medullary rays







EXAM NIGHT

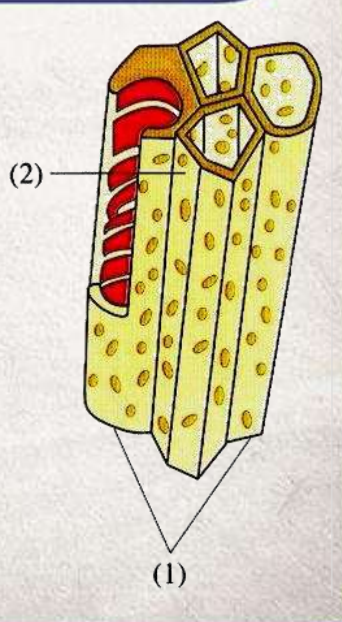
Multiple choice questions



The following figure shows a group of cells that are adapted to perform a certain function :

(2) The function of cells no. (1) and (2) is ……………..

- **transporting food substances.**
- **transporting water.**
- **manufacturing food.**
- **storing food.**







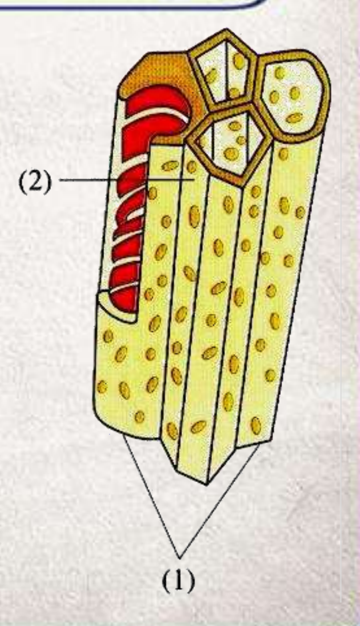
EXAM NIGHT **Multiple choice questions**



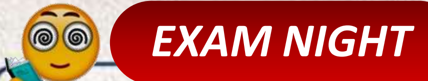
The following figure shows a group of cells that are adapted to perform a certain function :

(3) Cells no. (1) share cells no. (2) in ……….

- **performing photosynthesis process.**
- **their transverse section.**
- **their thickening With cutin.**
- **the stages of their formation.**





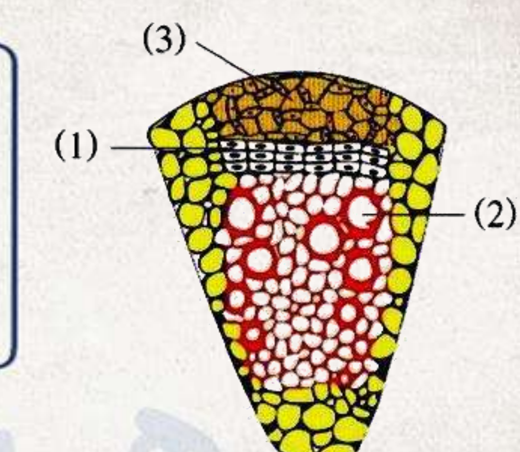


EXAM NIGHT

Multiple choice questions



In the opposite figure :



(1) What happens if tissue no. (1)

- Xylem will not be formed.
- Phloem will not be formed.
- Nothing will occur.
- Each of the xylem and phloem will not be formed.

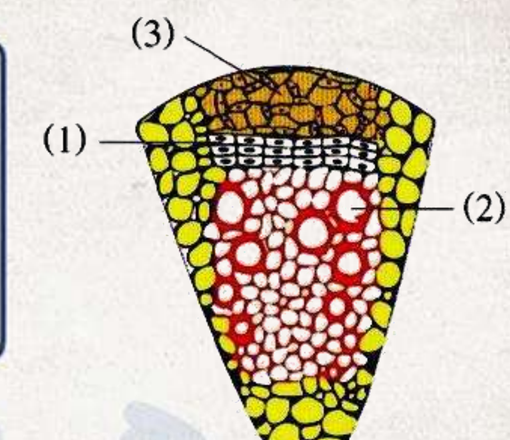


EXAM NIGHT Multiple choice questions



In the opposite figure :

(2) Tissue no. (2) is considered non-living, because ………



- it is a xylem tissue.
- its cell walls are thick.
- its cells don't contain nucleus or cytoplasm.
- it can't absorb water.



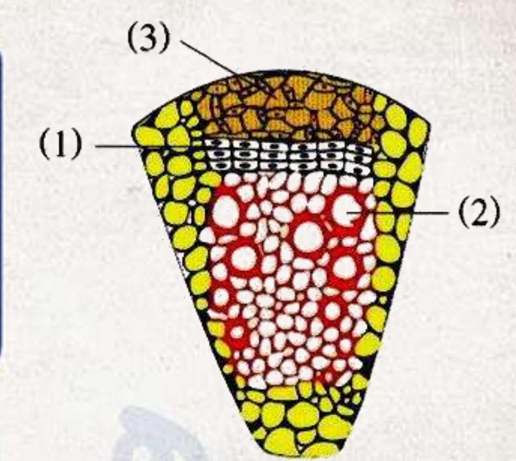
EXAM NIGHT

Multiple choice questions



In the opposite figure :

(3) Which of the following is considered from the functions of tissue no. (3) ?



- Transporting water and salts only.
- Transporting high-energy food only.
- Transporting water, salts and high-energy food to all the plant parts.
- Storing food.





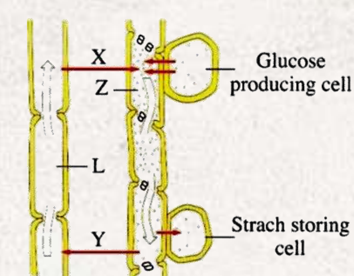
Multiple choice questions





From the opposite figure :

(1) Letter (Z) represents a ....



- companion cell.
- sieve tube.
- xylem vessel.
- root hair.





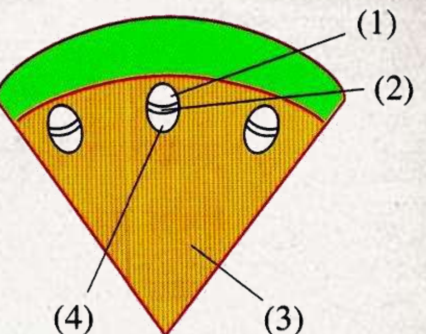
EXAM NIGHT

Multiple choice questions



The opposite figure represents a section in a plant stem :

(1) What is the number of the tissue that is specialized in transporting the organic food substances to the different plant parts ?





(1).

(2).

(3).

(4).

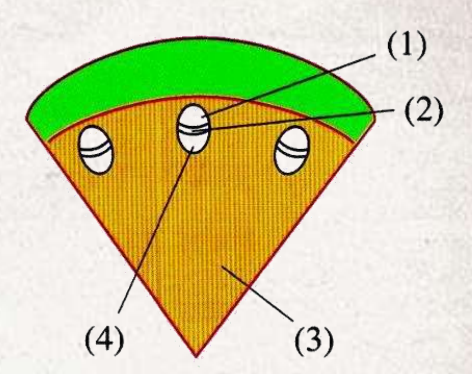


EXAM NIGHT **Multiple choice questions**



The opposite figure represents a section in a plant stem :

(2) What is the number of the tissue that shares indirectly in the transport process ?



- **(1).**
- **(2).**
- **(3).**
- **(4).**



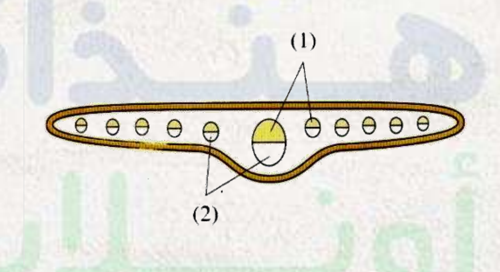

EXAM NIGHT **Multiple choice questions**

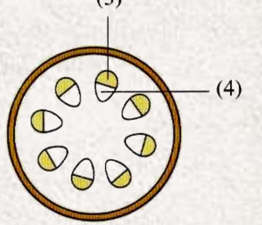


The two following figures illustrate the tissues that transport water and the tissues that transport sucrose in two transverse sections in two plant parts :

(1) Which of the following tissues transport water ?

- **(1) & (3).**
- **(2) & (4).**
- **(2) & (3).**
- **(1) & (4).**









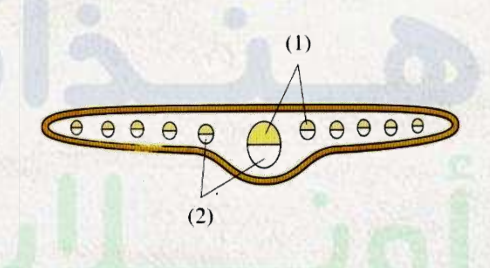
EXAM NIGHT Multiple choice questions

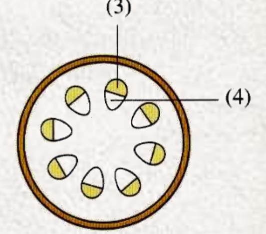


The two following figures illustrate the tissues that transport water and the tissues that transport sucrose in two transverse sections in two plant parts :

(2) Which of the following tissues transport sucrose ?

- (1) & (3).
- (2) & (4).
- (2) & (3).
- (1) & (4).









EXAM NIGHT

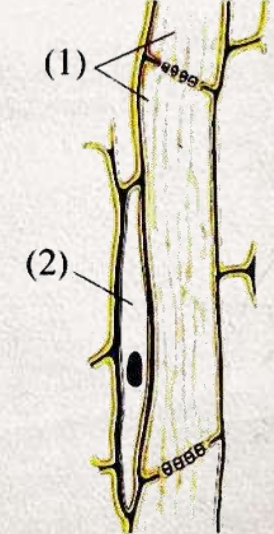
Multiple choice questions



In the opposite figure :

(1) All the following happen on removing structure no. (2), except that ....

- the tissue will lose its source of energy.
- the tissue won't be able to divide.
- the growth of the tissue will stop.
- the tissue changes to xylem tissue.







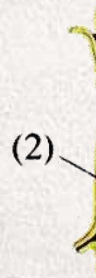
EXAM NIGHT | Multiple choice questions



In the opposite figure :

(2) Structure no. (1) shares structure no. (2) in containing

- ribosomes.
- cytoplasm.
- mitochondria.
- nucleus.







EXAM NIGHT | Multiple choice questions

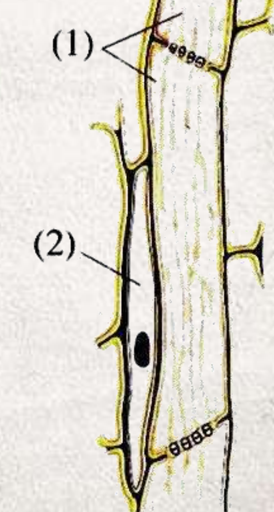


In the opposite figure :

(3) Which of the following substances pass(es) from cell no. (1) to cell no. (2) through the cytoplasmic strands ?



- ATP
- Salts.
- Water.
- Glucose.







EXAM NIGHT | Multiple choice questions



Which of the following graphs illustrates the relation between the transpiration rate and the water flow in the stem during the day hours ?

(a)	(b)	(c)	(d)
Water flow / Transpiration rate	Water flow / Transpiration rate	Water flow / Transpiration rate	Water flow / Transpiration rate





EXAM NIGHT

Multiple choice questions



The colloidal nature of xylem vessels' walls plays a role in all the following, except …………

- the occurrence of imbibition phenomenon.
- the presence of cohesion force.
- the existence of water columns held against the effect of gravity.
- the presence of adhesion force.





EXAM NIGHT | Multiple choice questions



Which of the following works on increasing the active transport process in the phloem ?

- **Decreasing the temperature and oxygen deficiency.**
- **Decreasing the temperature and increasing oxygen.**
- **Increasing both the temperature and the concentration of oxygen.**
- **Increasing the temperature and decreasing oxygen.**



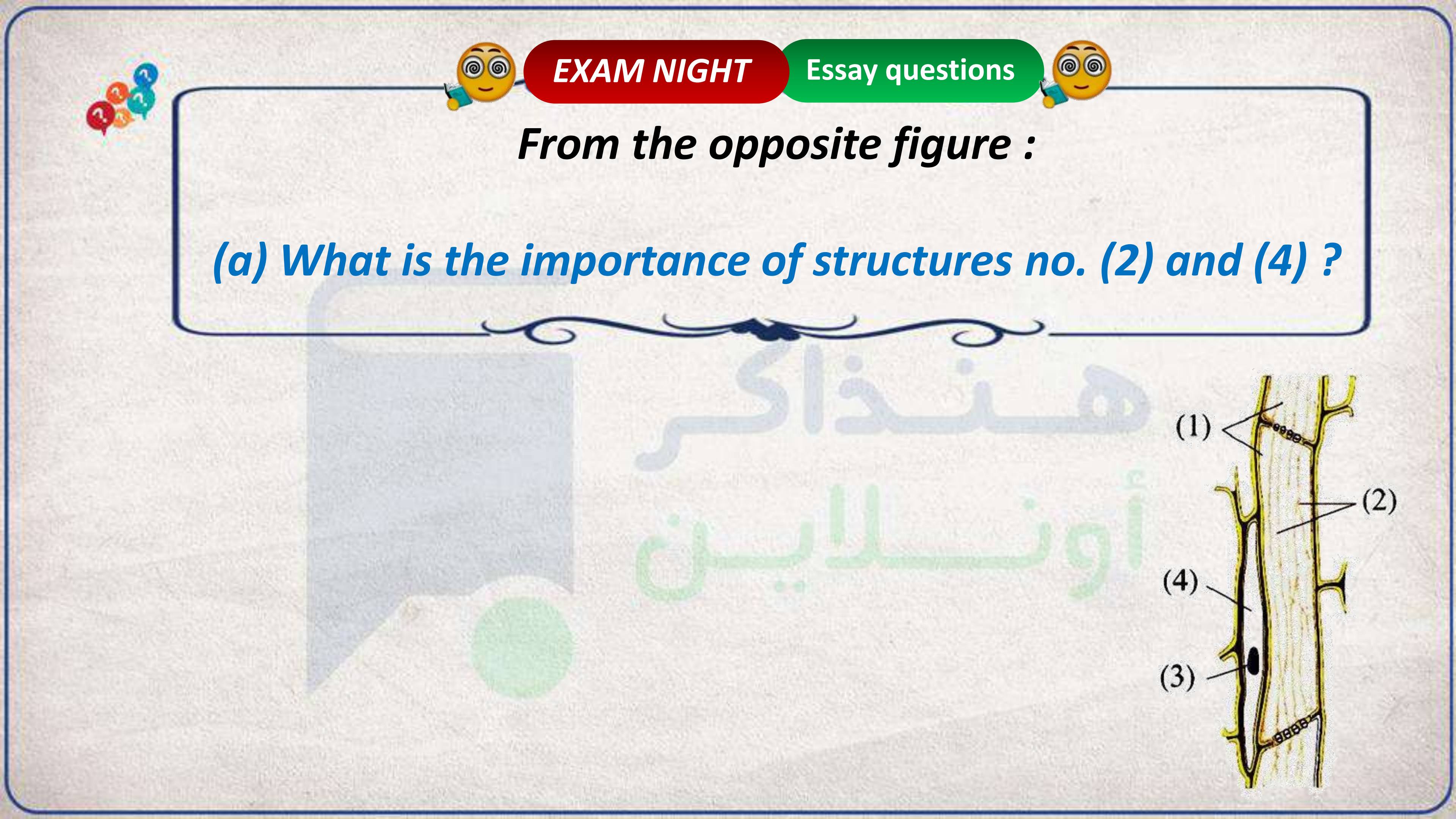


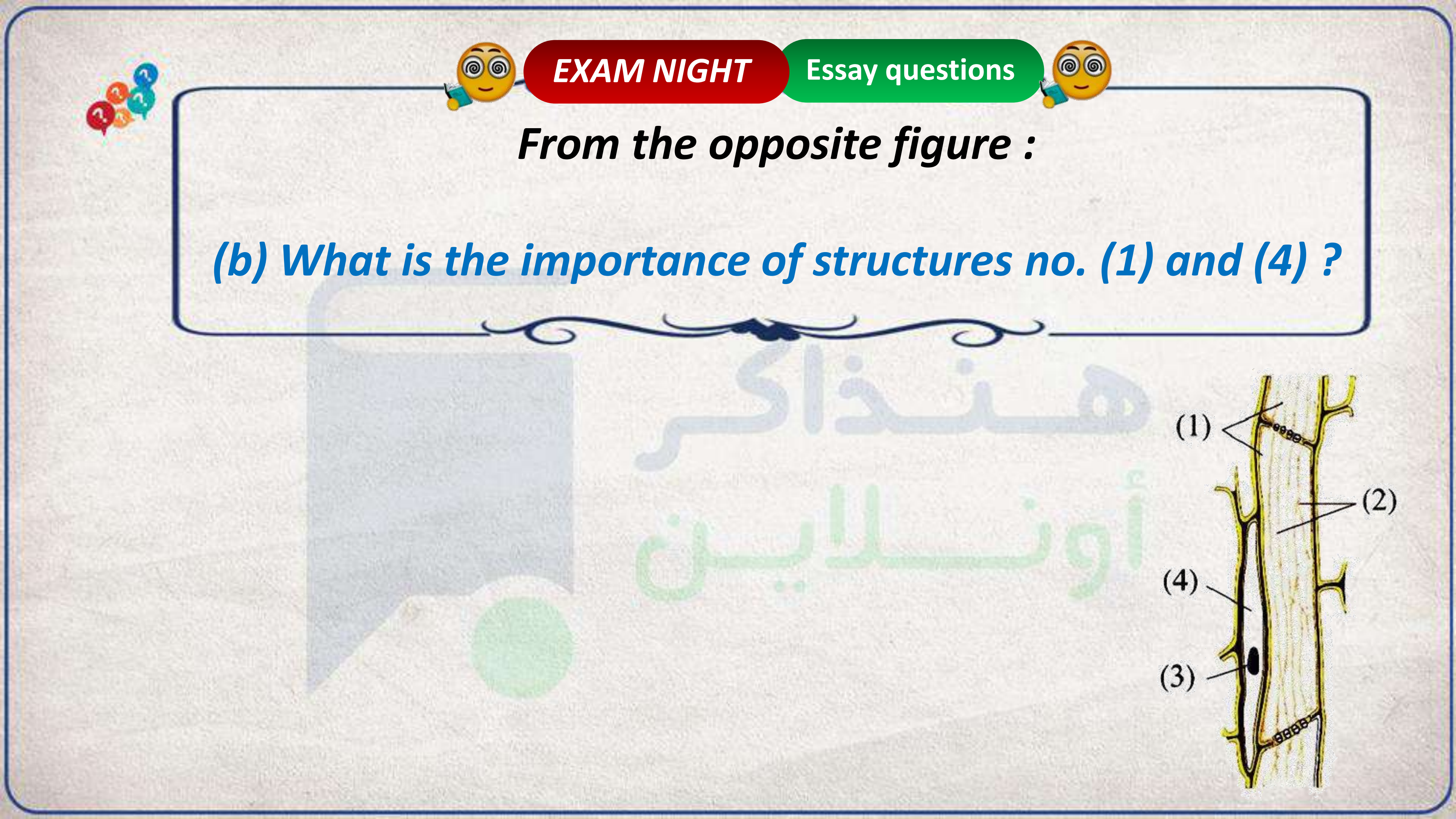
EXAM NIGHT **Essay questions**



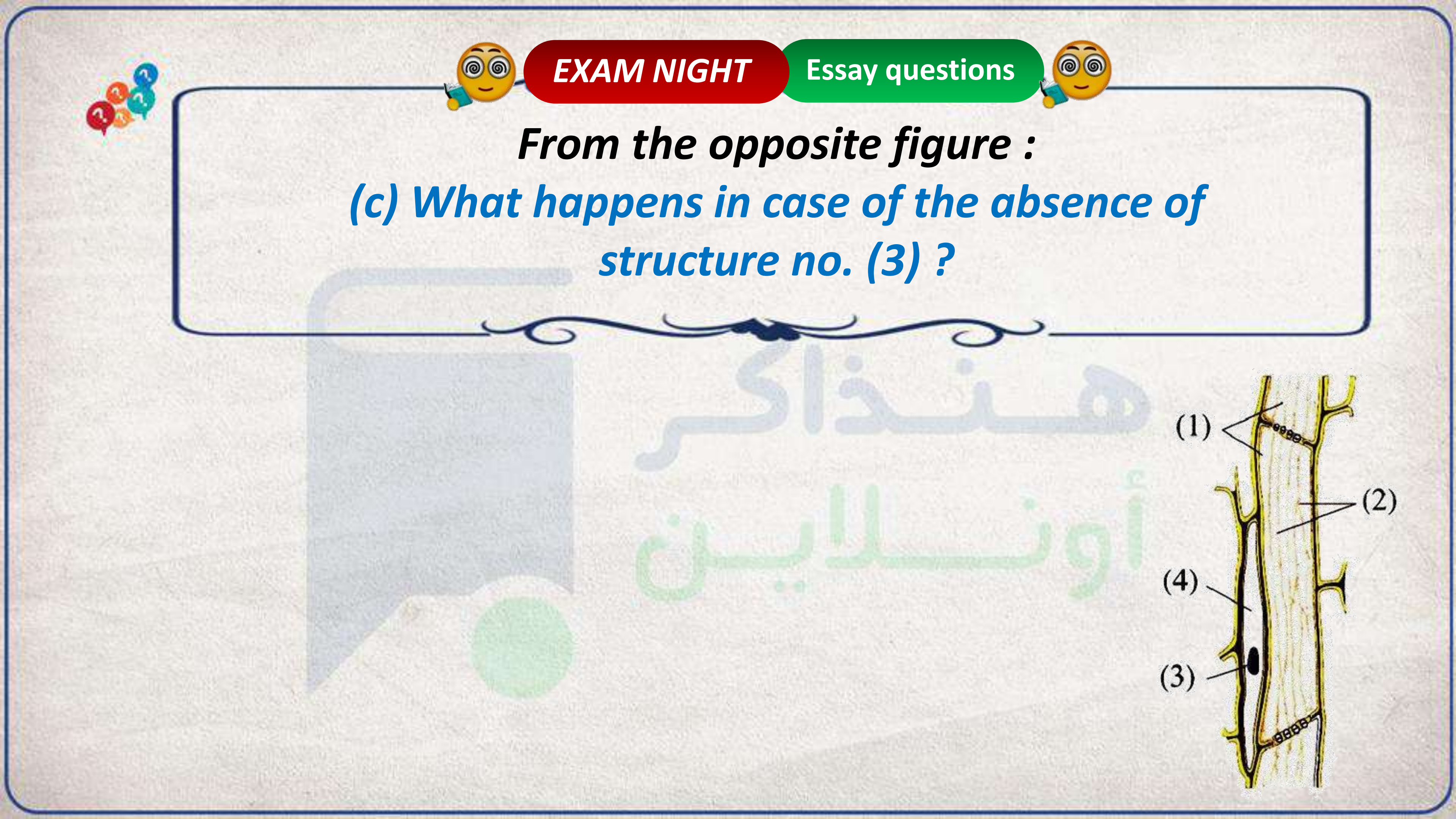
"The Spirogyra alga contains developed vascular bundles".

How far this statement is correct ? "With explanation.


EXAM NIGHT
Essay questions
From the opposite figure :
(a) What is the importance of structures no. (2) and (4) ?
(1)
(2)
(4)
(3)



EXAM NIGHT
Essay questions
From the opposite figure :
(b) What is the importance of structures no. (1) and (4) ?
(1)
(2)
(4)
(3)



EXAM NIGHT
Essay questions
From the opposite figure :
(c) What happens in case of the absence of structure no. (3) ?
(1)
(2)
(4)
(3)







"In plants, there are tissues that are related to the transport function". Determine :

(a) The name of these tissues.







EXAM NIGHT

Essay questions



"In plants, there are tissues that are related to the transport function". Determine :

(b) The type of substances that are transported through these tissues.







Essay questions

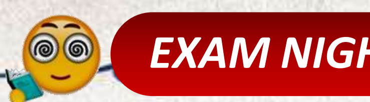


"In plants, there are tissues that are related to the transport function". Determine :

(c) The transport direction in each of these tissues..



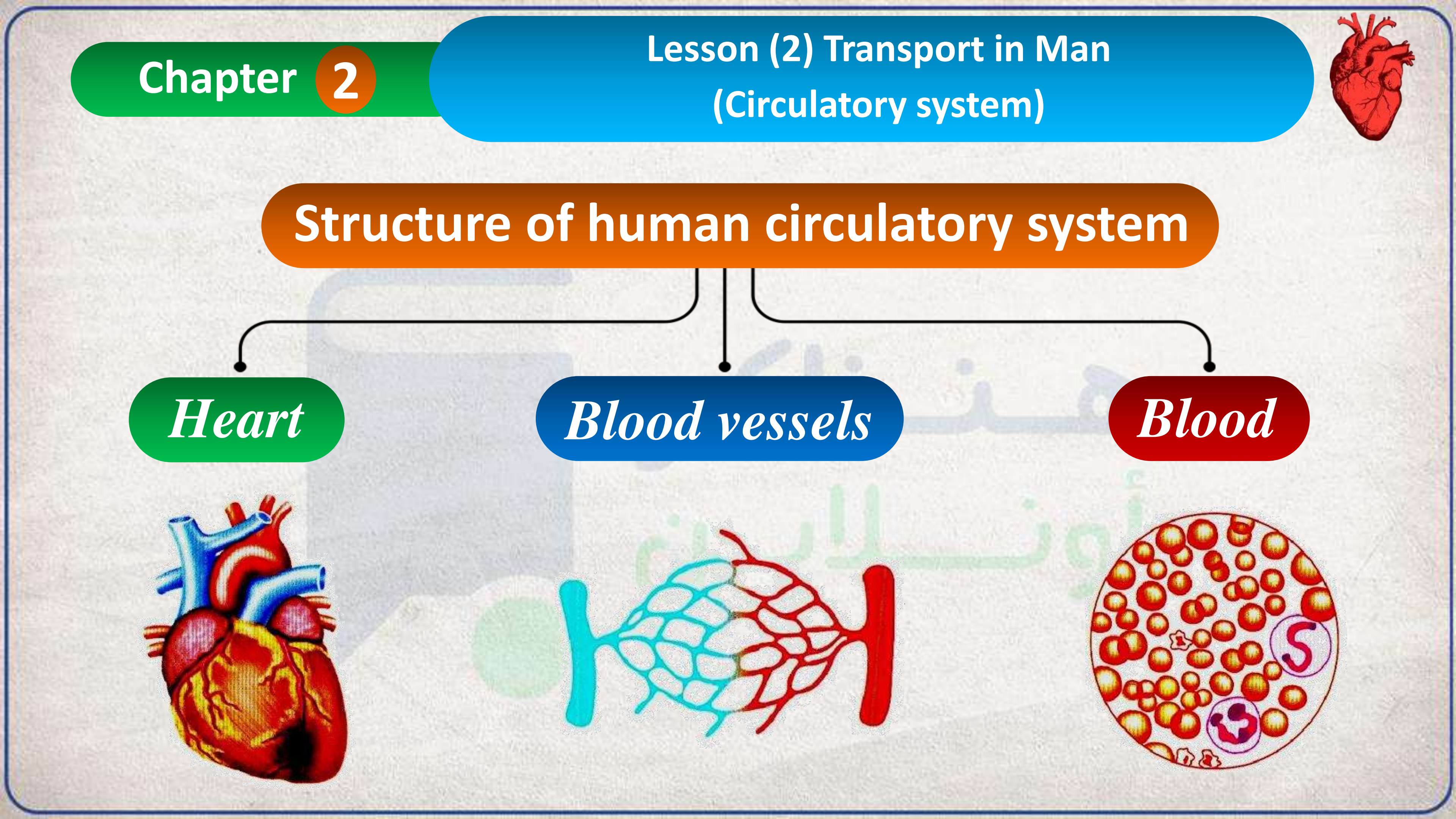


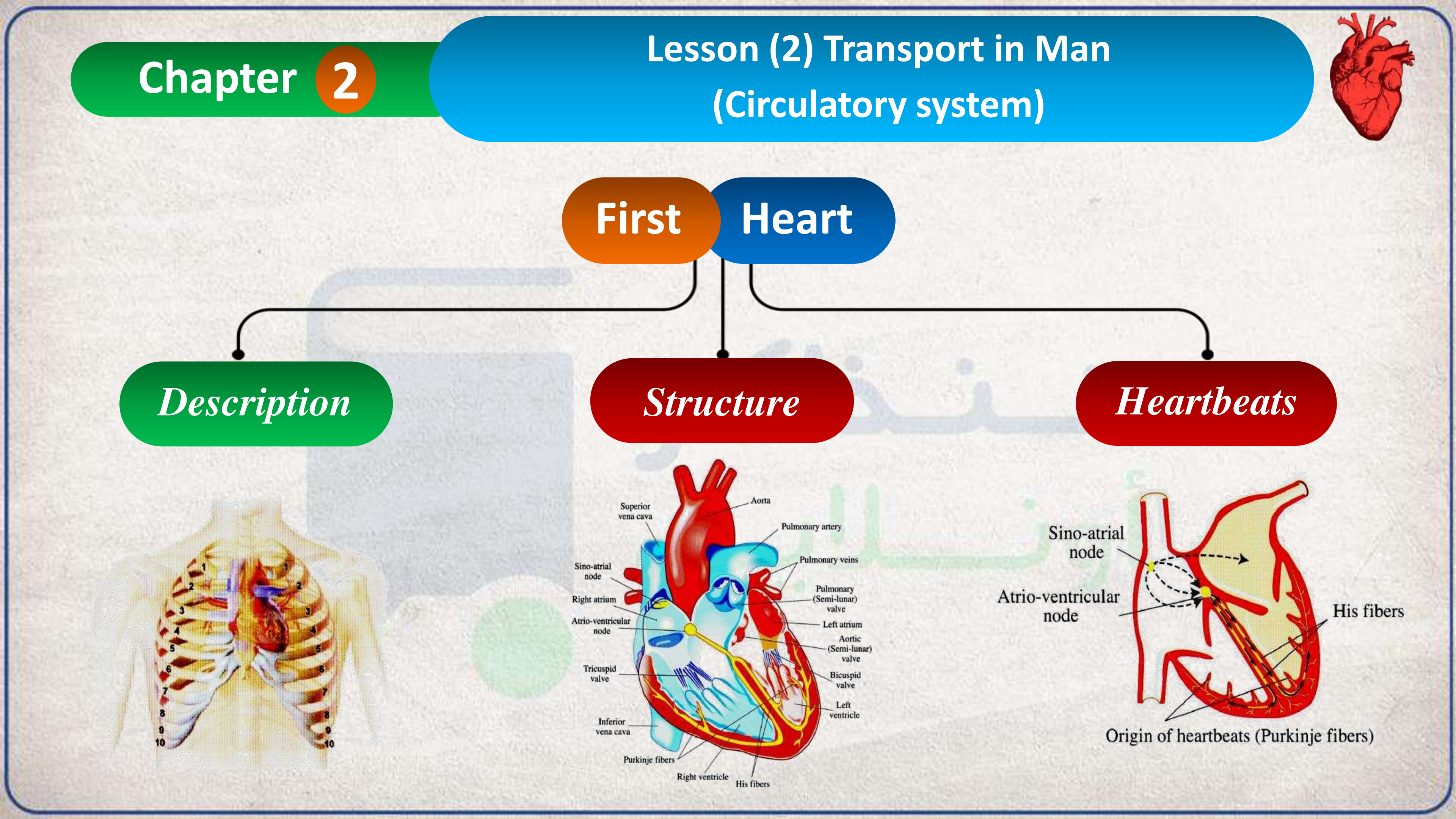




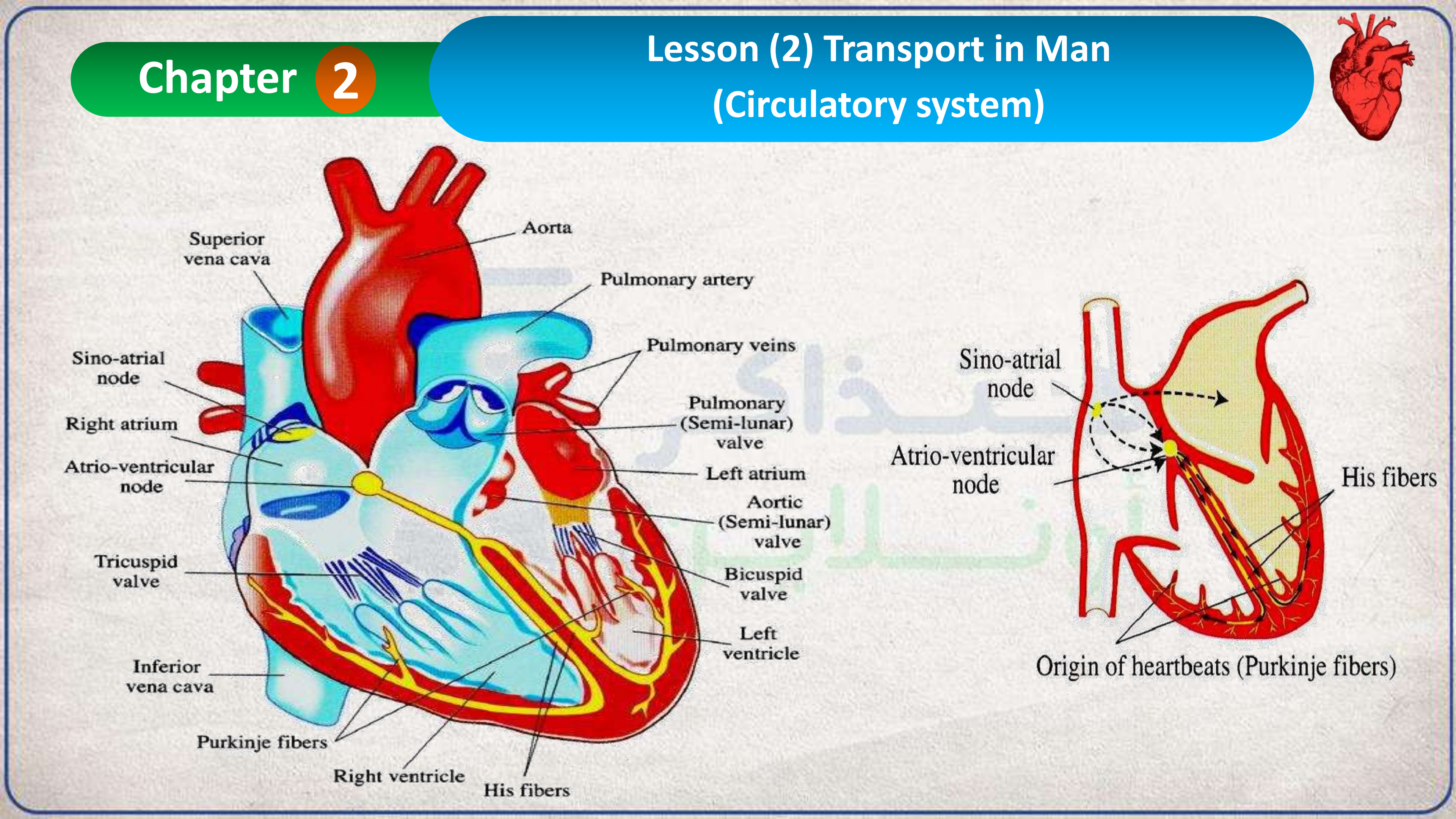
Give reason for :

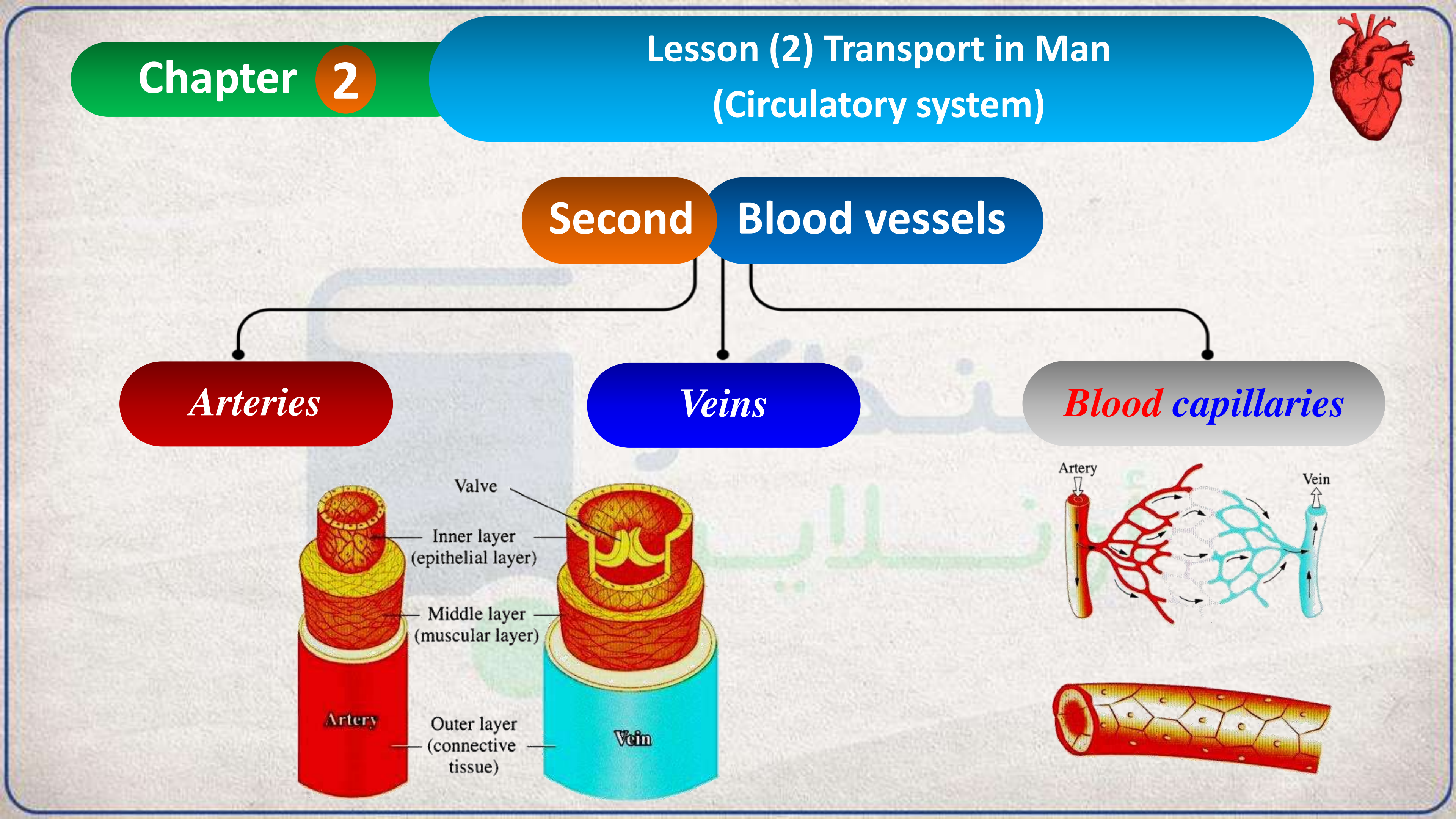
the slow movement of cytoplasm and its streaming in the sieve tubes may occur.


Chapter 2
Lesson (2) Transport in Man
(Circulatory system)
Structure of human circulatory system
Heart
Blood vessels
Blood



Chapter 2
Lesson (2) Transport in Man
(Circulatory system)
First
Heart
Description
Structure
Heartbeats
Superior vena cava
Aorta
Pulmonary artery
Pulmonary veins
Sino-atrial node
Right atrium
Atrio-ventricular node
Pulmonary (Semi-lunar) valve
Left atrium
Aortic (Semi-lunar) valve
Tricuspid valve
Bicuspid valve
Left ventricle
Inferior vena cava
Purkinje fibers
Right ventricle
His fibers
Sino-atrial node
Atrio-ventricular node
His fibers
Origin of heartbeats (Purkinje fibers)

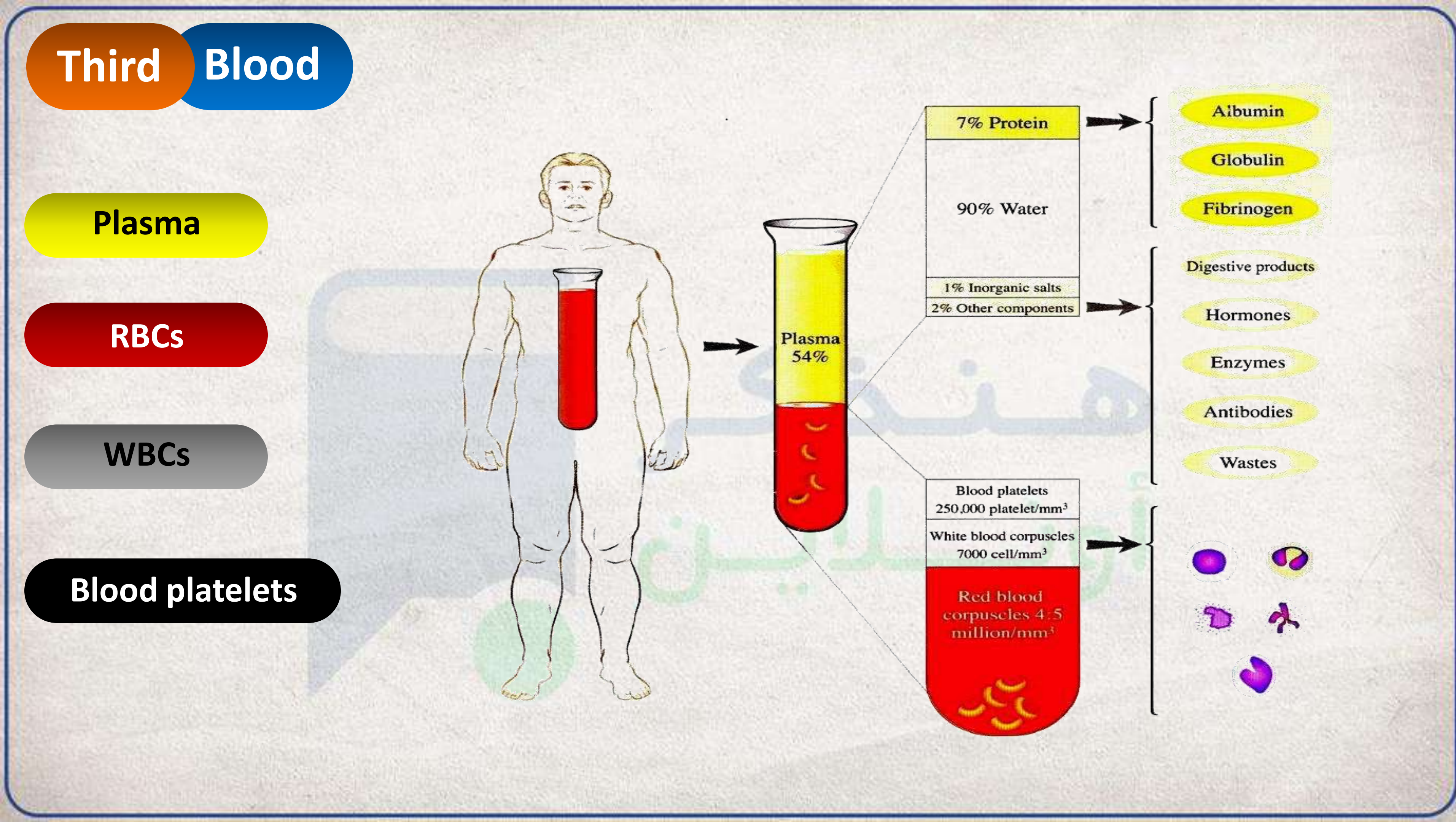

Chapter 2
Lesson (2) Transport in Man
(Circulatory system)
Aorta
Superior vena cava
Pulmonary artery
Pulmonary veins
Sino-atrial node
Right atrium
Pulmonary (Semi-lunar) valve
Atrio-ventricular node
Left atrium
Aortic (Semi-lunar) valve
Tricuspid valve
Bicuspid valve
Left ventricle
Inferior vena cava
Purkinje fibers
Right ventricle
His fibers
Sino-atrial node
Atrio-ventricular node
His fibers
Origin of heartbeats (Purkinje fibers)



Chapter 2
Lesson (2) Transport in Man
(Circulatory system)
Second
Blood vessels
Arteries
Veins
Blood capillaries
Valve
Inner layer
(epithelial layer)
Middle layer
(muscular layer)
Outer layer
(connective
tissue)
Artery
Vein
Artery
Vein

P.O.C	Arteries	Veins	Blood capillaries
Structure of the wall :	Consists of three layers : - Outer : connective tissue. - Middle : thick and consists of involuntary muscles. - Inner :one row of epithelial cells that is topped with elastic fibers.	Has the same structure of the arterial wall, but the middle layer is of lower thickness and there are less elastic fibers (rare).	Consists of one row of thin epithelial cells with tiny pores between them.
Wall thickness	Thicker than veins.	Thinner than arteries.	Very thin

P.O.C	Arteries	Veins	Blood capillaries
Ability to pulsate :	Pulsate	Don't pulsate	——
Valves :	Absent (except in the beginning of the aortic and pulmonary arteries).	The presence of internal valves in some veins, especially those that present near the skin.	Absent
Direction of blood:	From heart to all the body parts.	From all the body parts to heart.	From the arterioles to the venules.
Type of carried blood :	Oxygenated blood (light red), except the pulmonary artery.	Deoxygenated blood (dark red) except the pulmonary veins.	Oxygenated blood in the arterioles (except the arterioles inside the lung), and deoxygenated blood in the venules (except the venules inside the lung).
Location:	Found buried among the body muscles.	Some of them are present near the skin.	Spread in the spaces between cells of all the body tissues.



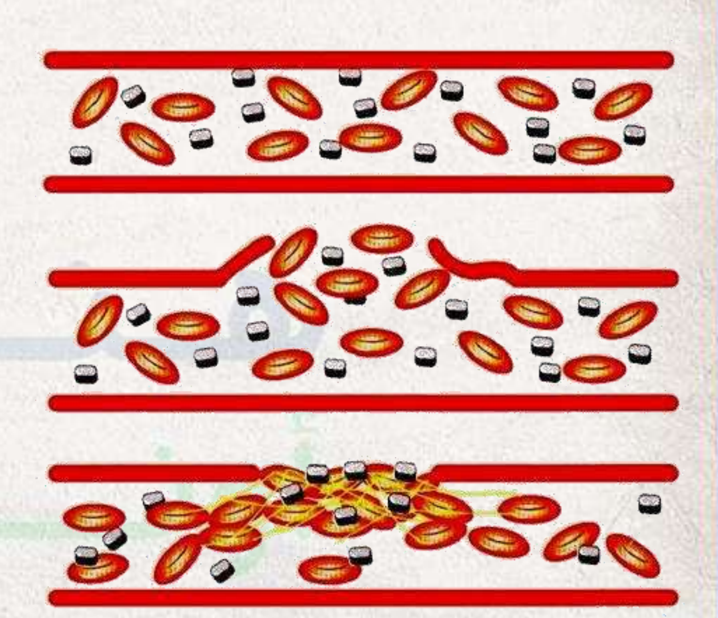
Third
Blood
Plasma
RBCs
WBCs
Blood platelets
Plasma
54%
7% Protein
90% Water
1% Inorganic salts
2% Other components
Albumin
Globulin
Fibrinogen
Digestive products
Hormones
Enzymes
Antibodies
Wastes
Blood platelets
250,000 platelet/mm³
White blood corpuscles
7000 cell/mm³
Red blood corpuscles 4.5 million/mm³

P.O.C	RBCs	WBCs	Blood platelets
Origin :	Bone marrow.	Bone marrow, spleen, and lymphatic system.	Bone marrow.
Shape :	Biconcave round-shaped cells.	Don’t have a specific shape, as there are many types of them.	Non-cellular and small-sized particles.

P.O.C	RBCs	WBCs	Blood platelets
Number/mm³ of blood :	Adult male :4-5 million cells. Adult female: 4-4.5 million cells.	7,000 cells and this number increases in case of diseases.	250,000
Average age :	120 days (doesn't exceed 4 months).	Some types live for 13 : 20 days.	About 10 days, as they are regenerated continuously.
Function:	* Transport O_2 from the two lungs to the different body cells. * Transport CO_2 from the different body cells to the two lungs.	* Protecting the body through : - Attacking microbes. - Stopping the foreign substances that are produced by microbes. - Getting rid of dead cells and wastes. - Producing antibodies through specific types of white blood corpuscles.	Play an important role in the blood clotting process after injuries.
Colour :	Red, due to the presence of haemoglobin substance.	Colourless	——
Presence of nucleus :	Enucleated	Nucleated	——

Blood clot

- It occurs when a blood vessel is cut or teared.

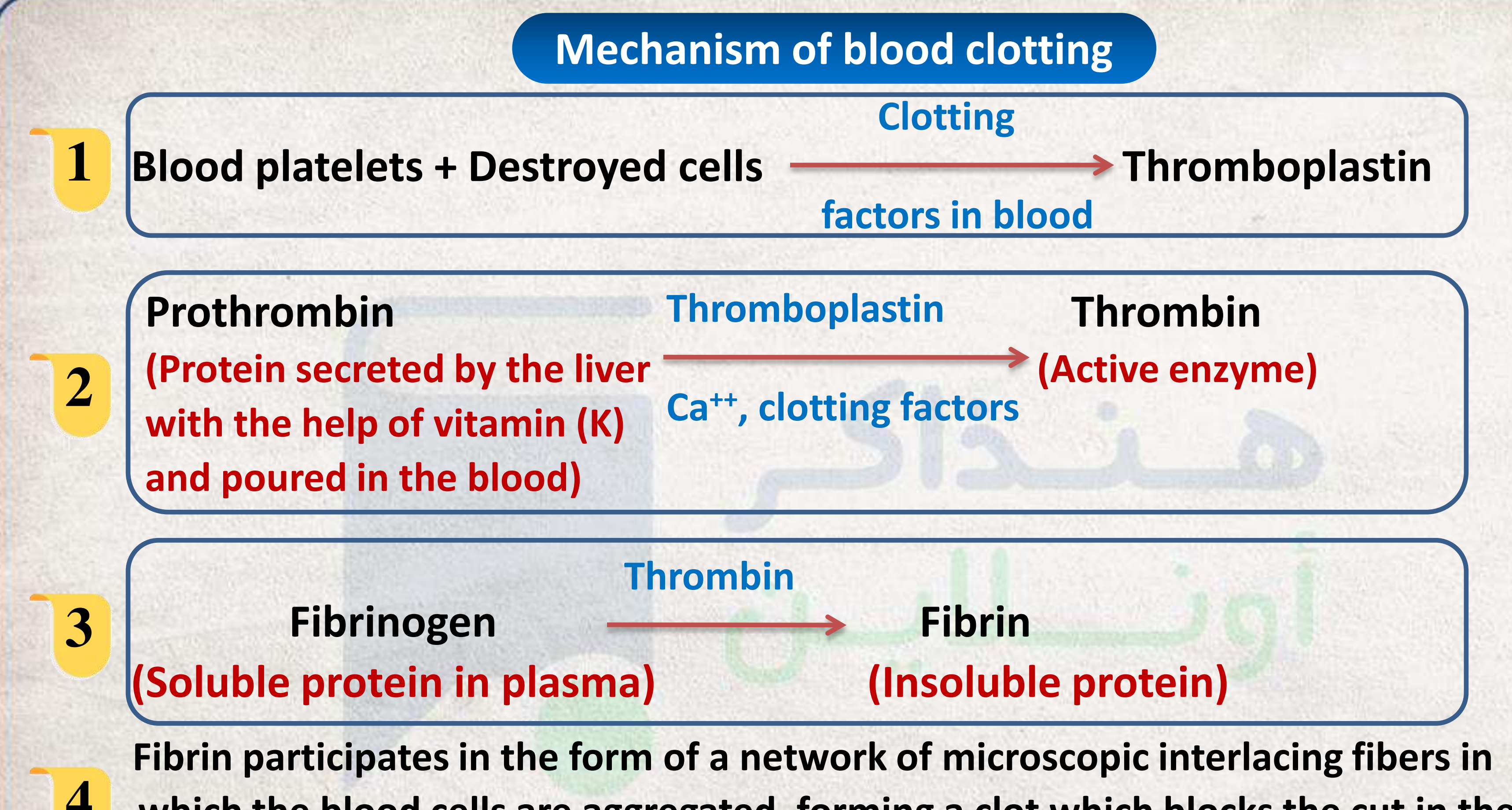


- **Importance of clotting :** protecting blood by preventing bleeding, in order not to lose a large amount of it which may expose the body to a shock that is followed by death.



- **Factors of coagulation (clotting) of blood :**

1) Exposure of blood to air.
2) Friction of blood with a rough surface, such as destroyed cells and vessels.


Mechanism of blood clotting
1
Blood platelets + Destroyed cells
Clotting
factors in blood
Thromboplastin
2
Prothrombin
(Protein secreted by the liver
with the help of vitamin (K)
and poured in the blood)
Thromboplastin
Ca++, clotting factors
Thrombin
(Active enzyme)
3
Fibrinogen
(Soluble protein in plasma)
Thrombin
Fibrin
(Insoluble protein)
4
Fibrin participates in the form of a network of microscopic interlacing fibers in
which the blood cells are aggregated, forming a clot which blocks the cut in the
damaged blood vessel to stop the bleeding.

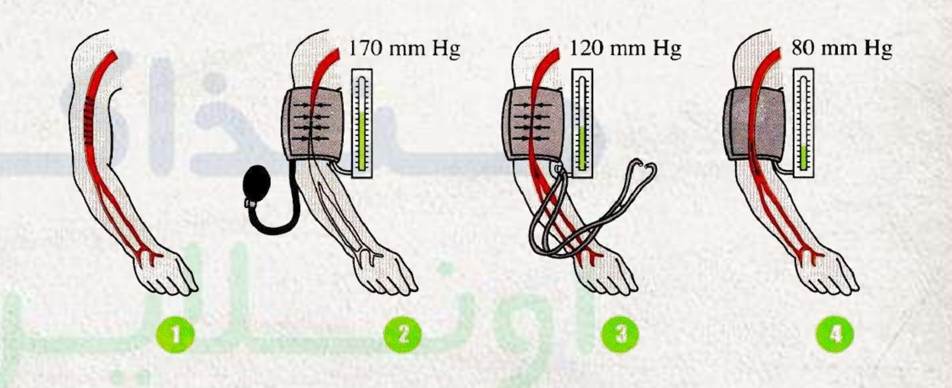
Blood pressure

Mechanism

- ✓ Upper number : measured during the ventricular contraction (systolic) which represents the maximum blood pressure.

- ✓ Lower number : measured during the ventricular relaxation (diastolic) which represents the minimum blood pressure.

Sphygmomanometer







EXAM NIGHT

Multiple choice questions



Which of the following is considered the correct path for the transfer of the contraction impulse to the muscles of ventricles ?

- Sino-atrial node ⟶ His fibers ⟶ Purkinje fibers ⟶ Wall of ventricles.
- Purkinje fibers ⟶ Sino-atrial node ⟶ His fibers ⟶ Wall of ventricles.
- Sino-atrial node ⟶ His fibers ⟶ Atrio-ventricular node ⟶ Wall of ventricles.
- Atrio-ventricular node ⟶ His fibers ⟶ Purkinje fibers ⟶ Wall of ventricles.





EXAM NIGHT | Multiple choice questions



Which of the following blood vessels contains the lowest percentage of carbon dioxide and the highest percentage of oxygen ?

- Pulmonary vein.
- Superior vena cava.
- Pulmonary artery.
- Inferior vena cava.





EXAM NIGHT

Multiple choice questions



Which choice in the following table is applied to the pulmonary artery ?

(A).

(B).

(C).

(D).

	Carried blood	Muscular layer in the wall	The size of the internal cavity
a	Deoxygenated	Thick	Small
b	Deoxygenated	Thin	Large
c	Oxygenated	Thick	Small
d	Oxygenated	Thin	Large





EXAM NIGHT

Multiple choice questions



Which of the following doesn't agree with the characteristics of the pulmonary vein ?

- It carries oxygenated blood.
- It has a wider lumen than that of the pulmonary artery.
- The thickness of its wall is thinner than that of the pulmonary artery's wall.
- It carries deoxygenated blood.





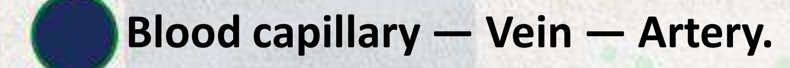
EXAM NIGHT | **Multiple choice questions**



The following figures show transverse sections in three blood vessels Which of the following refers to the correct arrangement for each of (X), (Y) and (Z) respectively ?



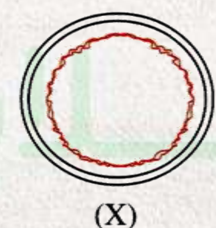
- Artery — Blood capillary — Vein.



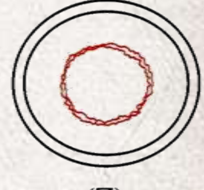
- Blood capillary — Vein — Artery.

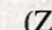


- Vein — Blood capillary — Artery.
- Vein — Artery — Blood capillary.







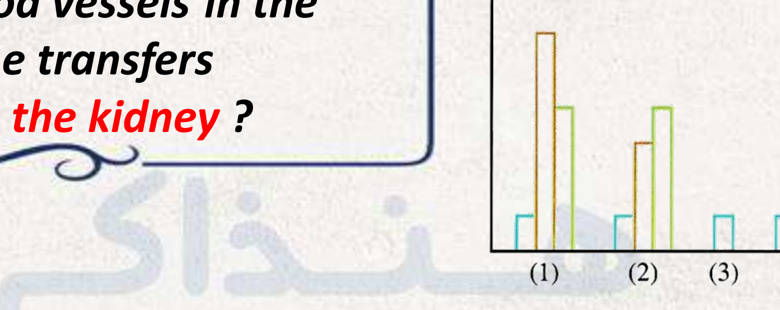




EXAM NIGHT **Multiple choice questions**



The opposite graph illustrates the relation between the thickness of the tissue layer that forms different types of blood vessels in the human body, which one transfers the oxygenated blood to the kidney ?



- **(1).**
- **(2).**
- **(3).**
- **(4).**

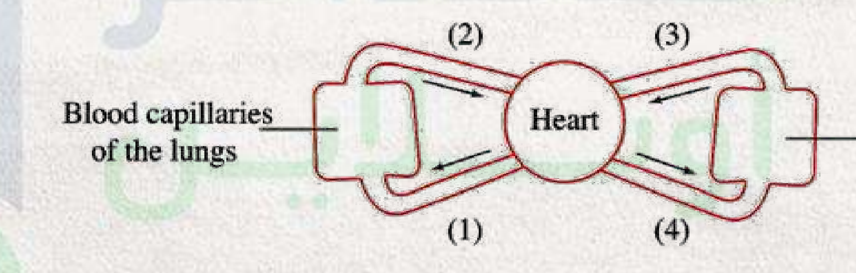



EXAM NIGHT Multiple choice questions



In the following figure, which blood vessels carry deoxygenated blood ?

- (1) & (2).
- (1) & (3).
- (2) & (3).
- (2) & (4).





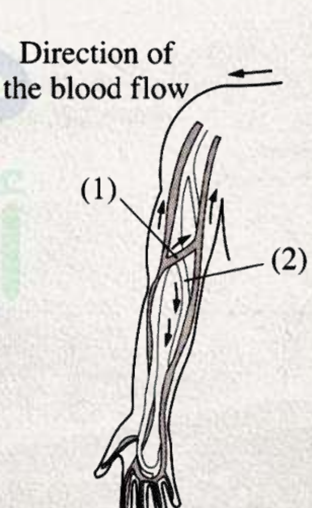

EXAM NIGHT Multiple choice questions



In the opposite figure :

(1) Which of the following statements doesn't agree with structure no. (1) ?

- Its wall contains valves.
- It carries blood to the heart.
- It is not a pulsating blood vessel.
- It carries oxygenated blood.







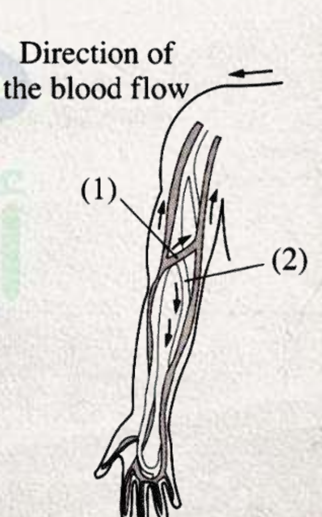
EXAM NIGHT Multiple choice questions



In the opposite figure :

(2) Which of the following doesn't agree with the characteristics of structure no. (2) ?

- It carries oxygenated blood.
- It carries deoxygenated blood.
- It carries blood away from the heart.
- The blood pressure in it is bigger than no. (1).







EXAM NIGHT

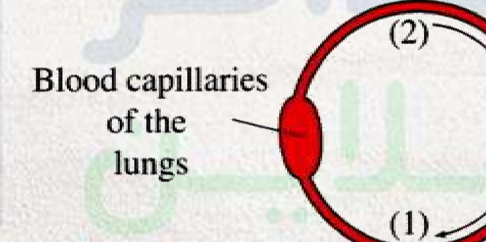
Multiple choice questions



In the following figure, which of the following blood vessels carry blood at low pressures ?



- (1) & (2).
- (1) & (4).
- (2) & (3).
- (2) & (4).







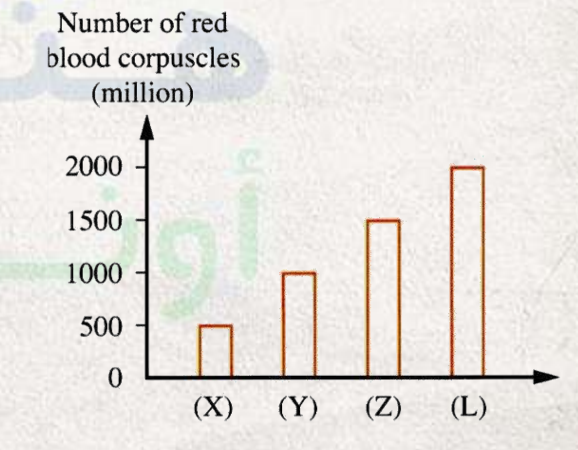
EXAM NIGHT | **Multiple choice questions**



In the opposite graph, which column represents the red blood corpuscles number that are formed through 15 minutes ?



- (X)
- (Y)
- (Z)
- (L)





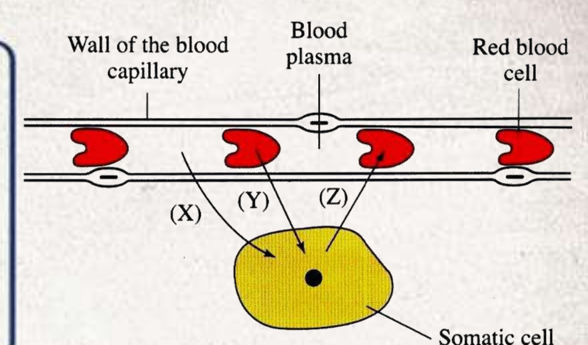


EXAM NIGHT

Multiple choice questions



In the opposite figure, symbols (Y) and (Z) represent ……… respectively.



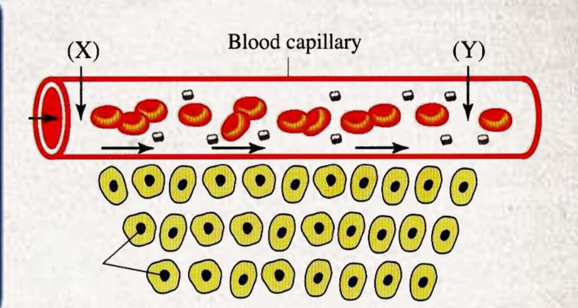
- oxygen, carbon dioxide and glucose
- glucose, oxygen and carbon dioxide
- carbon dioxide, oxygen and glucose
- oxygen, glucose and carbon dioxide



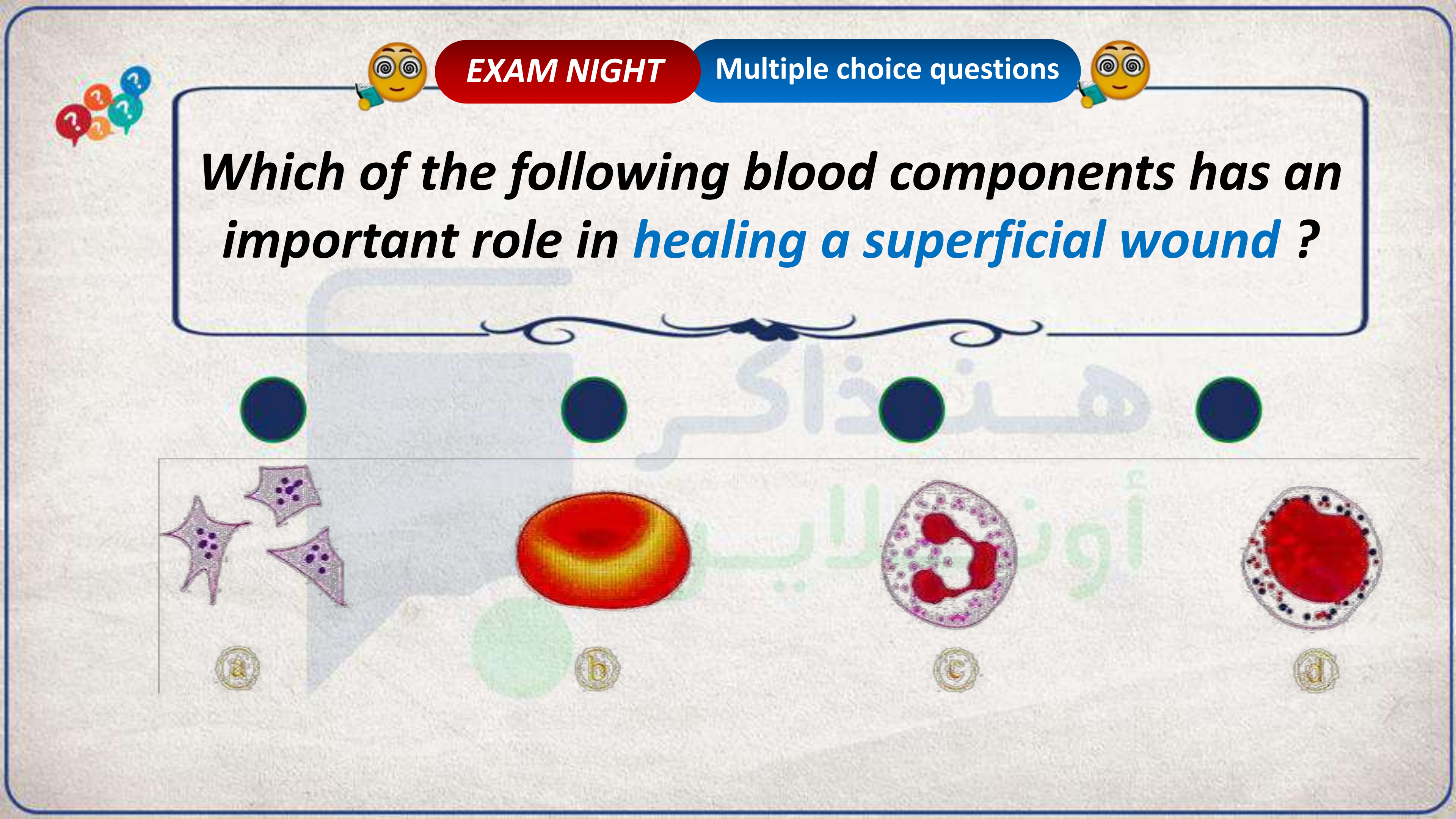
EXAM NIGHT | **Multiple choice questions**



In the opposite figure, which of the following substances its/their concentration at point (Y) is higher than at point (X) ?



- Oxygen.
- Starch.
- Amino acids.
- Urea.


EXAM NIGHT
Multiple choice questions
Which of the following blood components has an important role in healing a superficial wound ?
a
b
c
d




EXAM NIGHT | Multiple choice questions



Which of the following is present in the plasma during the absence of blood clotting factors from a blood sample ?

- Thromboplastin.
- Thrombin.
- Fibrin.
- Fibrinogen.




EXAM NIGHT **Multiple choice questions**



A/An ……………. appears on the blood of the heights inhabitants.

- increase in the number of RBCs
- increase in the number of WBCs
- decrease in the number of RBCs
- decrease in the number of WBCs.

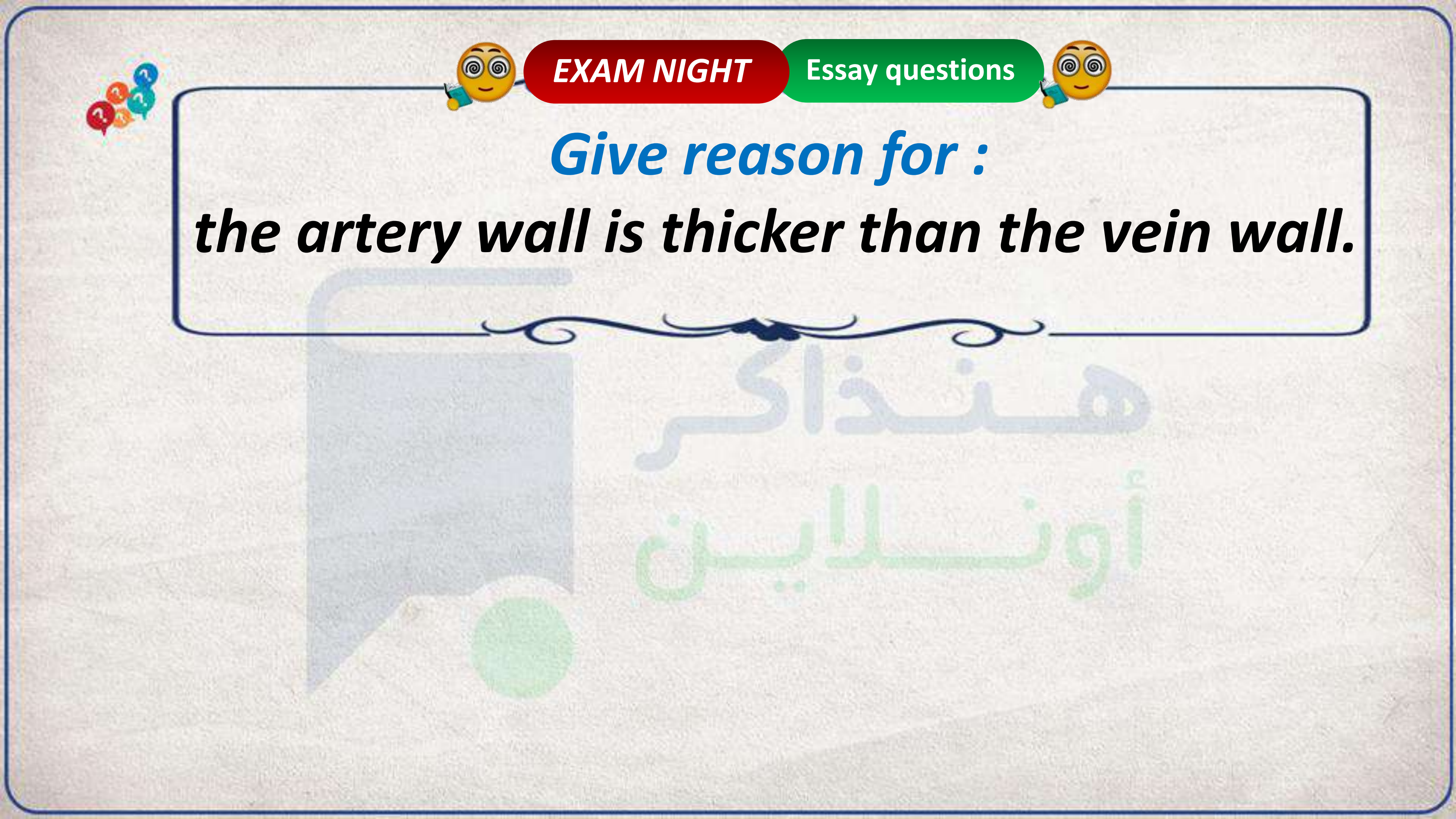



EXAM NIGHT | Multiple choice questions

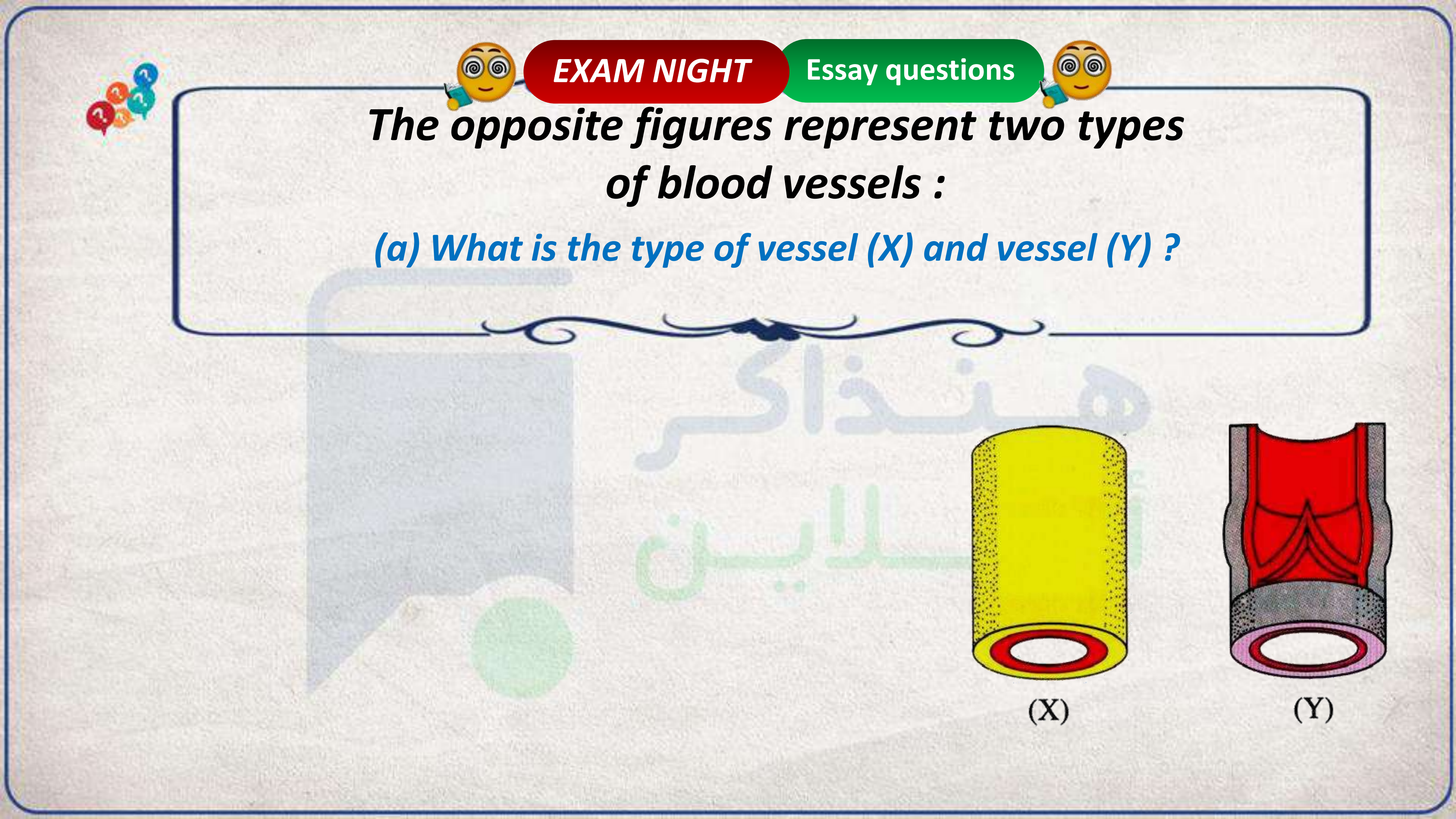


The normal volume of water in the blood of a person who has 6 liters of blood is about ……. liters.

- (2.4)
- (2.7)
- (2.9)
- (3.2)



EXAM NIGHT
Essay questions
Give reason for :
the artery wall is thicker than the vein wall.
هنذاكر
أونلاين


EXAM NIGHT
Essay questions
The opposite figures represent two types of blood vessels :
(a) What is the type of vessel (X) and vessel (Y) ?
(X)
(Y)

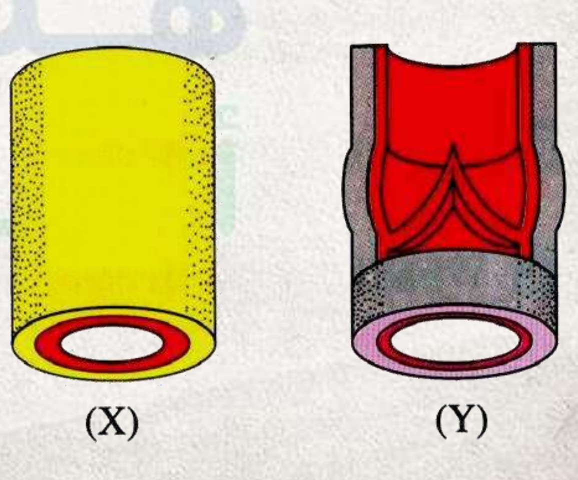



EXAM NIGHT | Essay questions



The opposite figures represent two types of blood vessels :

(b) In which layer are the elastic fibers present ? And in which vessel their presence is rare ?





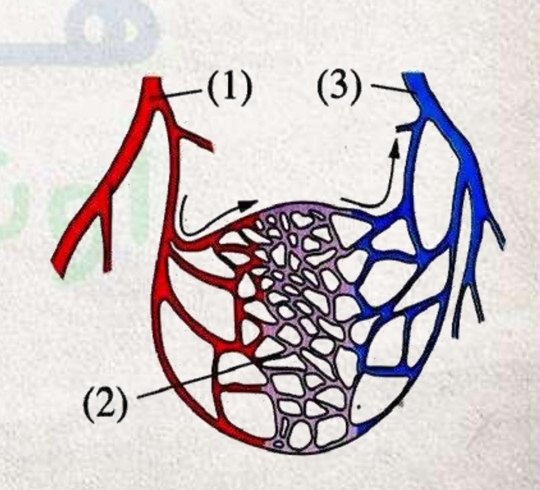


EXAM NIGHT **Essay questions**



The following figure represents a network of the blood vessels in the body :

(a) Which is the functional suitability of structure no. (2) ?

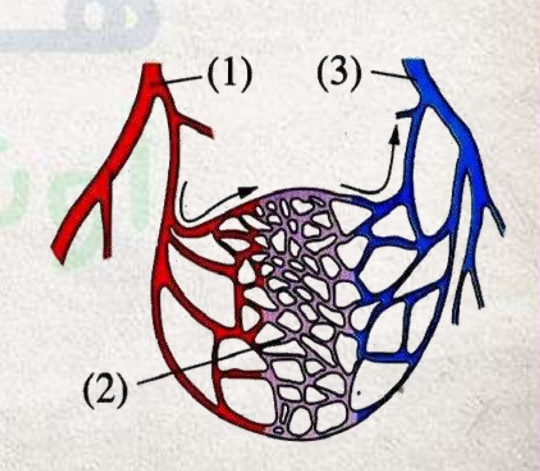




EXAM NIGHT
Essay questions


The following figure represents a network of the blood vessels in the body :

(b) Where is structure no. (2) in the human body ?







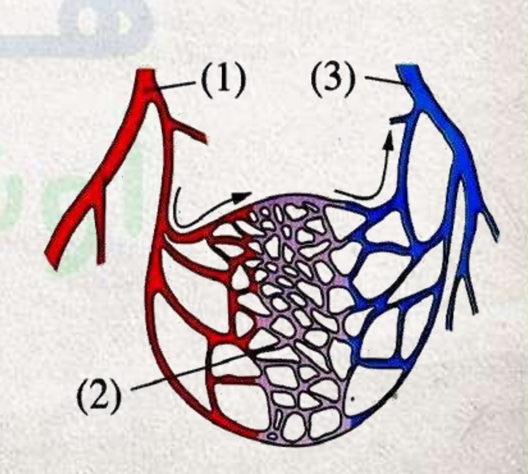
EXAM NIGHT | **Essay questions**



The following figure represents a network of the blood vessels in the body :

(c) Which of these structures contains :

1. The highest percentage of oxygen. 2. Valves that control the passage of blood.





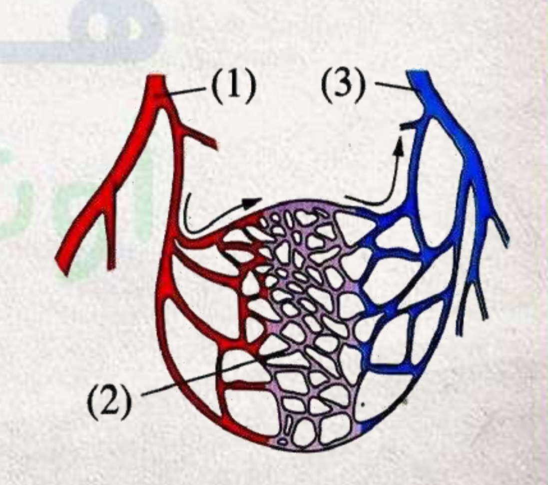


EXAM NIGHT **Essay questions**

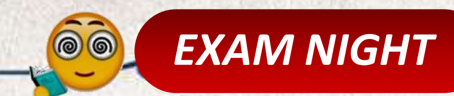


The following figure represents a network of the blood vessels in the body :

(d) What is the value of the blood pressure in structure no. (3) ?







Essay questions

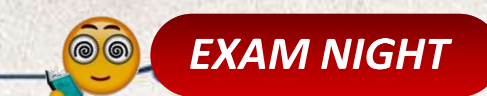


"The presence of valves is restricted on one type of blood vessels only outside the heart".

How far this statement is correct ? With explanation.







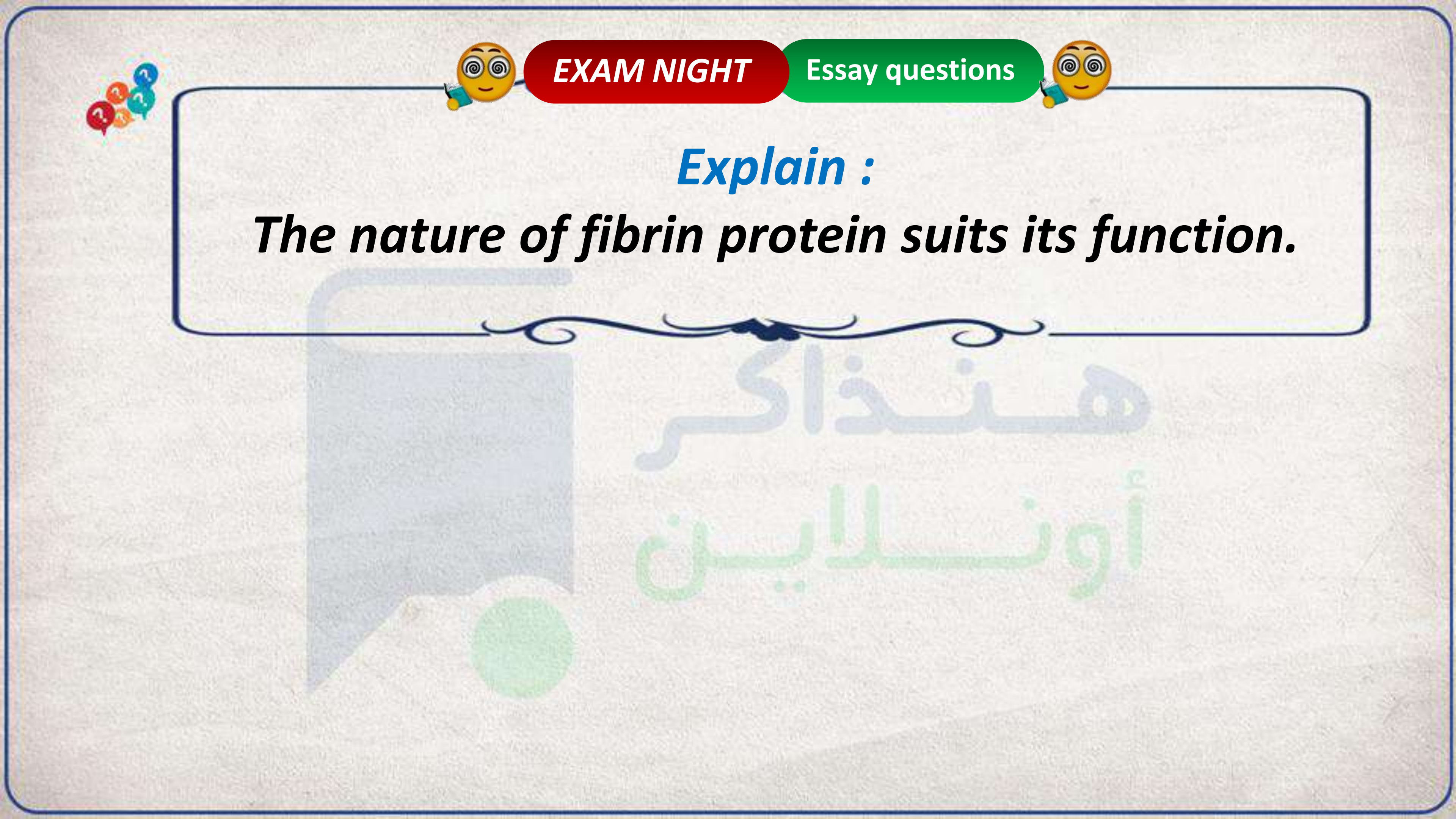
Essay questions

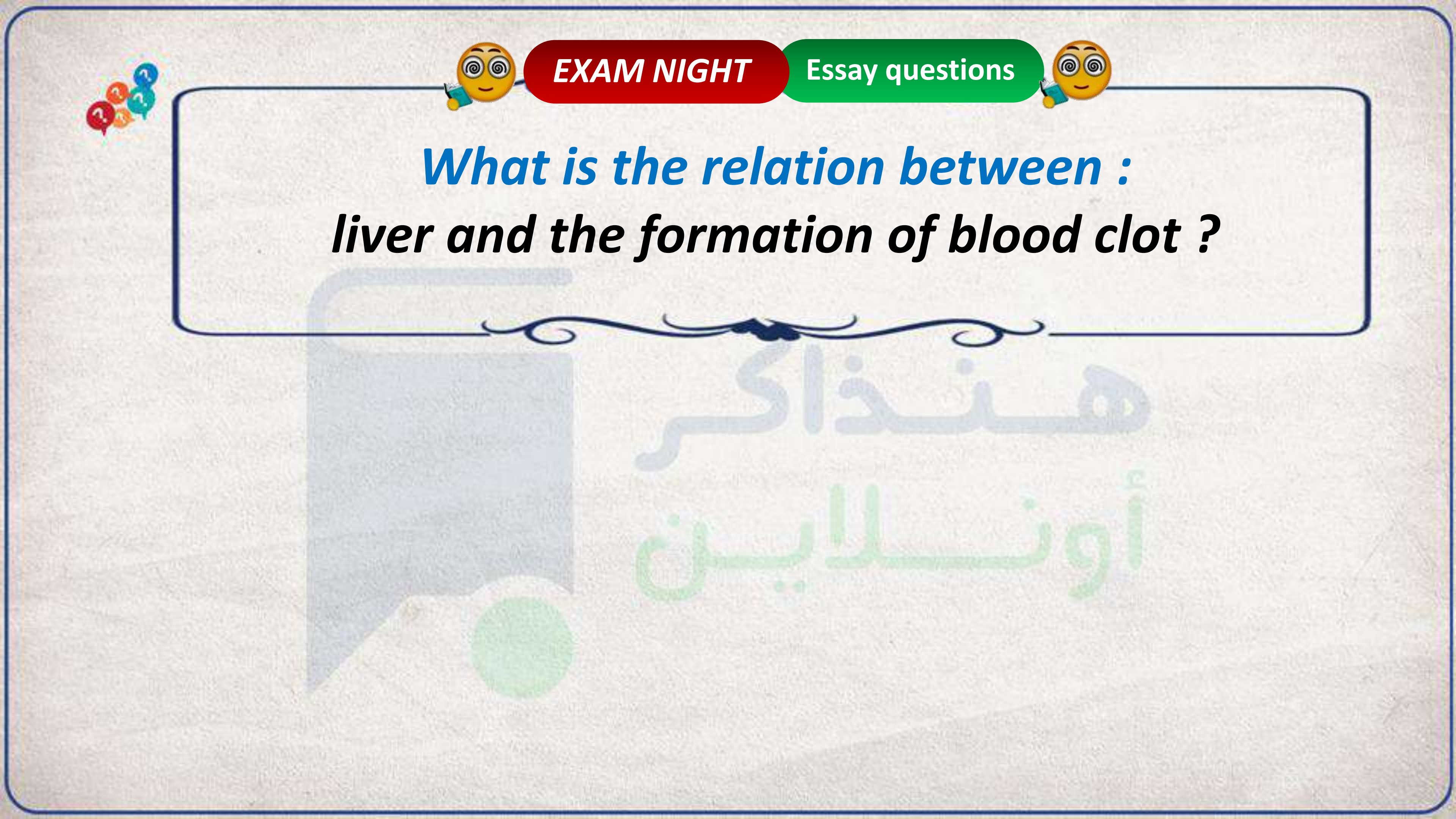


What happens in case of :

the shortage of iron element in the human food ?




EXAM NIGHT
Essay questions
Explain :
The nature of fibrin protein suits its function.
هنذاكر
أونلاين


EXAM NIGHT
Essay questions
What is the relation between :
liver and the formation of blood clot ?



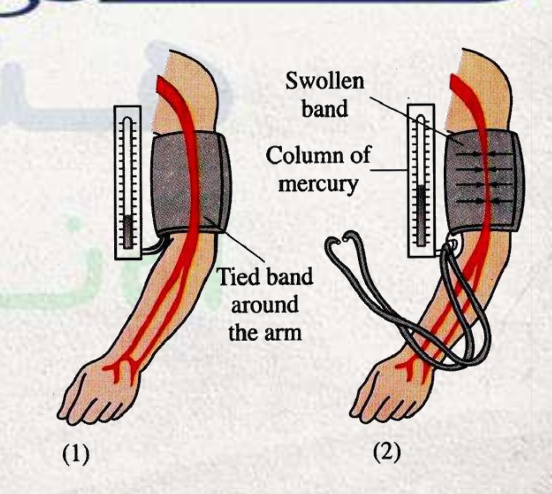


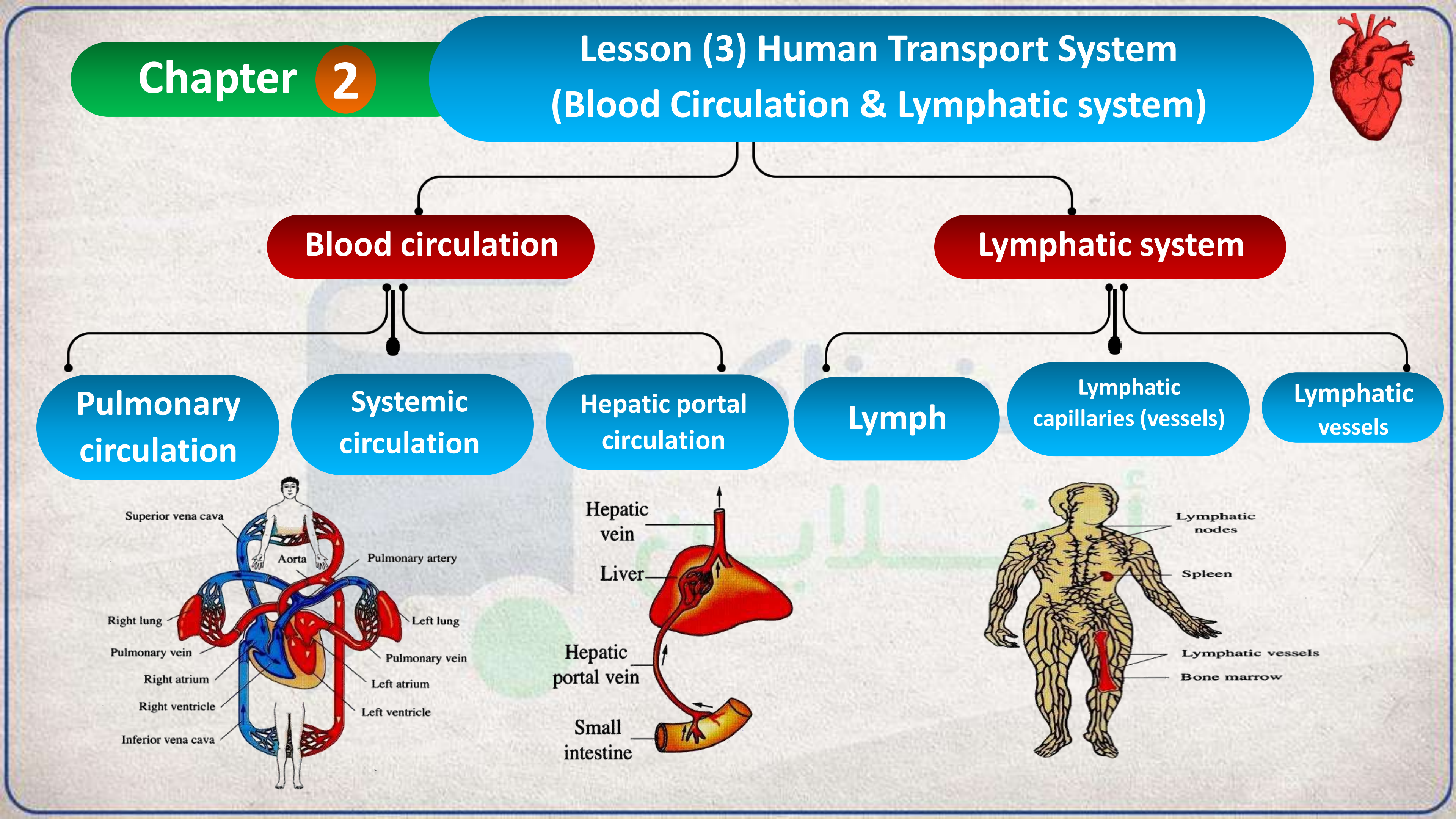
EXAM NIGHT **Essay questions**



The two opposite figures illustrate the mechanism of measuring the blood pressure in human :

Which one of them represents the systolic blood pressure ? And which one of them represents the diastolic blood pressure ? Giving reason.




Chapter 2
Lesson (3) Human Transport System
(Blood Circulation & Lymphatic system)
Blood circulation
Lymphatic system
Pulmonary circulation
Systemic circulation
Hepatic portal circulation
Lymph
Lymphatic capillaries (vessels)
Lymphatic vessels
Superior vena cava
Aorta
Pulmonary artery
Right lung
Left lung
Pulmonary vein
Pulmonary vein
Right atrium
Left atrium
Right ventricle
Left ventricle
Inferior vena cava
Hepatic vein
Liver
Hepatic portal vein
Small intestine
Lymphatic nodes
Spleen
Lymphatic vessels
Bone marrow





EXAM NIGHT

Multiple choice questions



The blood that reaches the brain cells leaves the heart from the ……………

- left atrium.
- right atrium.
- left ventricle.
- right ventricle.





EXAM NIGHT

Multiple choice questions



Which of the following disagrees with the contraction of the two ventricles ?

- The passage of blood through the aortic valve.
- The closure of the mitral valve.
- The closure of the tricuspid valve.
- The closure of the pulmonary valve.





EXAM NIGHT

Multiple choice questions



In the opposite diagram :

Which of the following blood vessels contain the highest percentage of oxygen gas ?

- (1) & (2).
- (2) & (3).
- (3) & (4).
- (1) & (4).

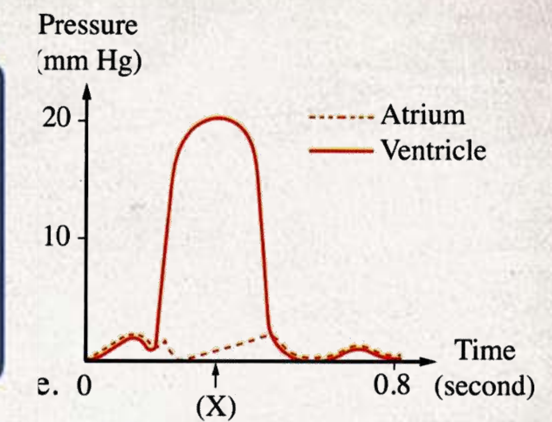


EXAM NIGHT **Multiple choice questions**



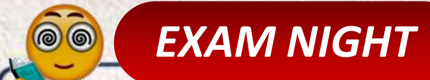
The opposite graph shows the changes that occur in each of the left atrium and left ventricle during heart beating :

Which of the following represents the state of valves at time (X) ?



- The closure of each of the mitral and aortic valves.
- The closure of mitral valve and opening of aortic valve.
- The opening of mitral valve and closure of aortic valve.
- The opening of each of the mitral and aortic valves.





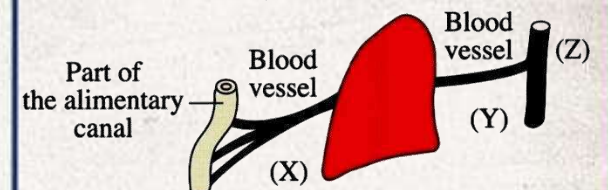
EXAM NIGHT

Multiple choice questions



In the opposite figure :

(1) Which of the following is transported in blood vessel (X) ?



- Glucose.
- Bile juice.
- Glycogen.
- Urea.

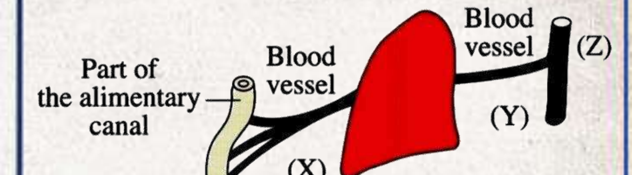


EXAM NIGHT Multiple choice questions



In the opposite figure :

(2) The blood that flows in blood vessel (Y) contains a high level of ....



- haemoglobin.
- carbo-aminohaemoglobin.
- oxyhaemoglobin.
- fatty acids.





EXAM NIGHT

Multiple choice questions



Which of the following diagrams illustrates the blood circulation in the human body ?

Two lungs
Heart
Rest of the body
(a)

Two lungs
Heart
Rest of the body
(b)

Two lungs
Heart
Rest of the body
(c)

Two lungs
Heart
Rest of the body
(d)



EXAM NIGHT Multiple choice questions

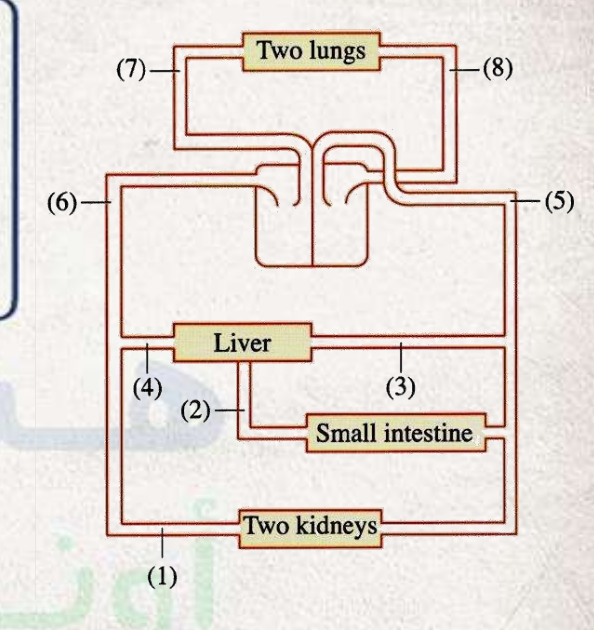


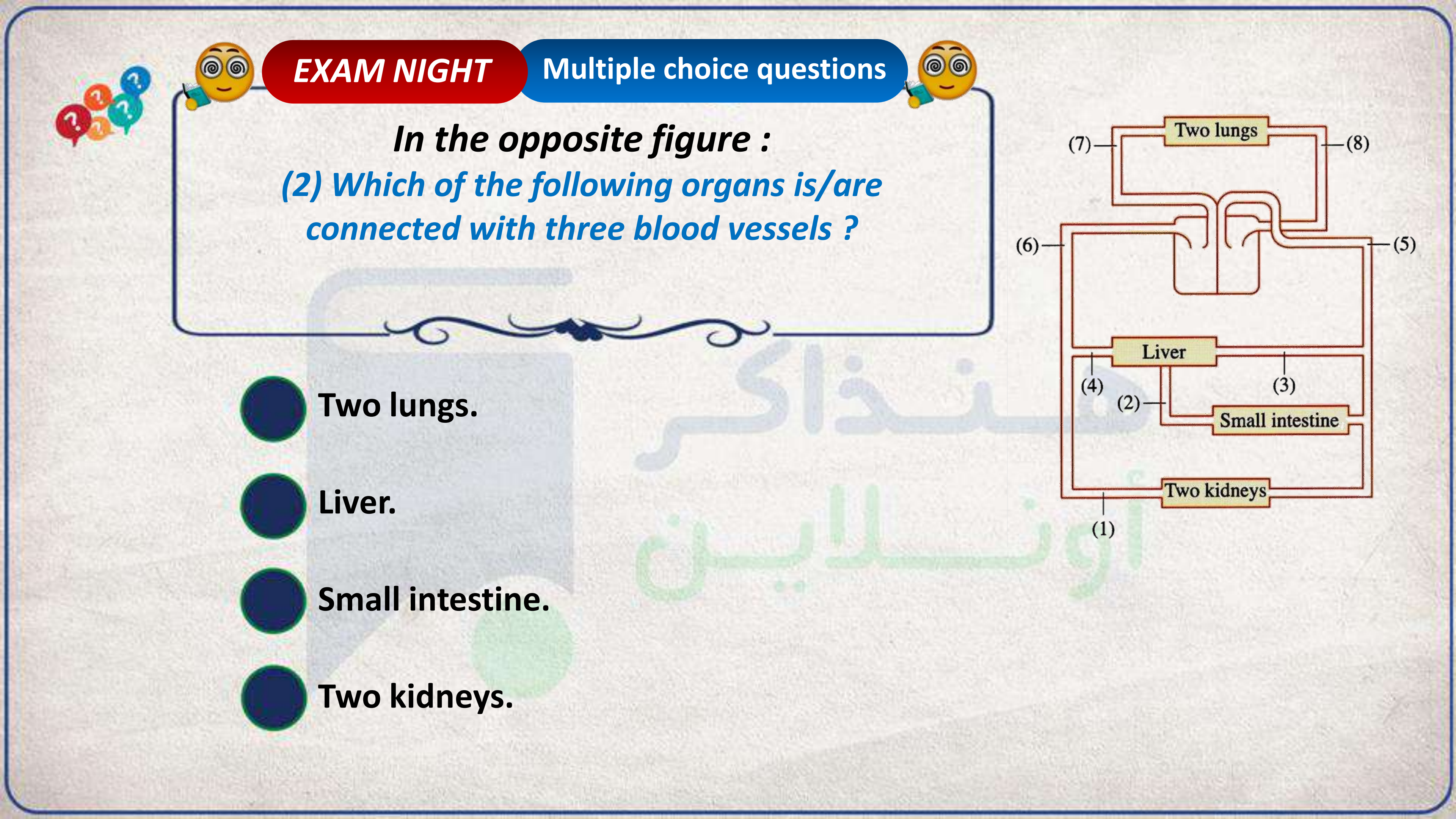
In the opposite figure :

(1) Through which of the following pathways the blood must pass to be transferred from the blood vessel no. (6) to the blood vessel no. (5) ?



- (6) → (4) → (1) → (5).
- (6) → (4) → (3) → (5).
- (6) → (7) → (8) → (5).
- (6) → (2) → (3) → (5).




EXAM NIGHT
Multiple choice questions
In the opposite figure :
(2) Which of the following organs is/are connected with three blood vessels ?
Two lungs.
Liver.
Small intestine.
Two kidneys.
Two lungs
(7)
(8)
(6)
(5)
Liver
(4)
(3)
(2)
Small intestine
Two kidneys
(1)



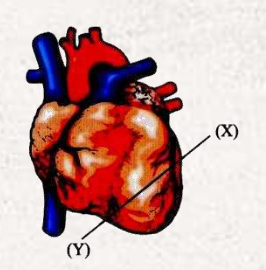


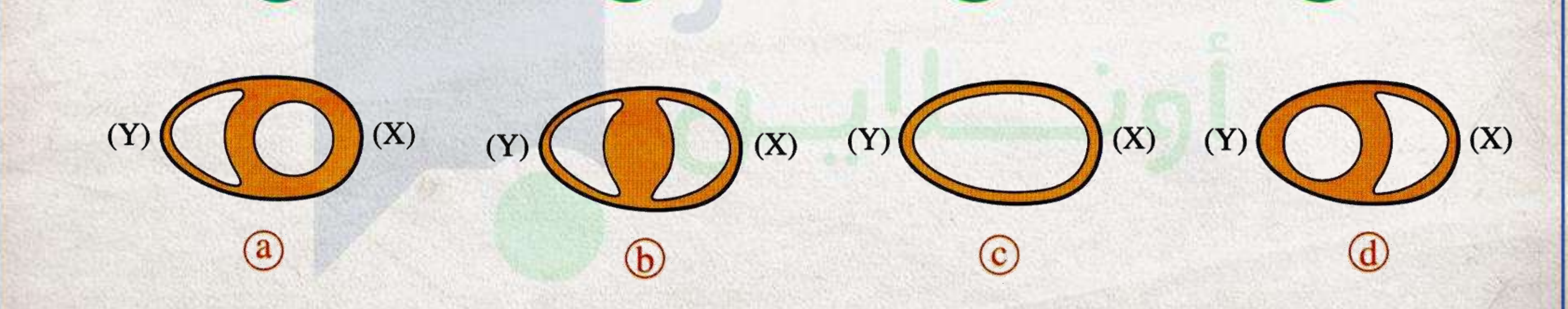
EXAM NIGHT

Multiple choice questions



Which of the following figures illustrates a section in the heart at the two points (X) and (Y) ?





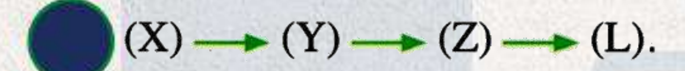


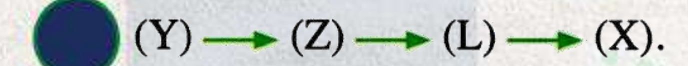
EXAM NIGHT | Multiple choice questions

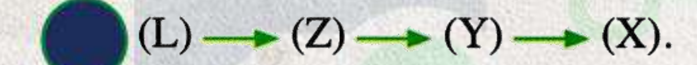


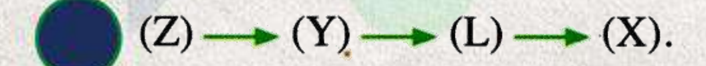
The following figures illustrate the stages of blood flow inside the human heart :

(1) If the blood circulation starts with the return of the deoxygenated blood from all the body parts, which of the following represents the correct pathway for that ?




















EXAM NIGHT **Multiple choice questions**



The following figures illustrate the stages of blood flow inside the human heart :

(2) The strongest stage of heart to pump blood is stage …………


(X).

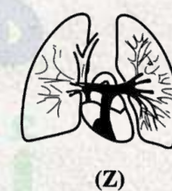

(Y).

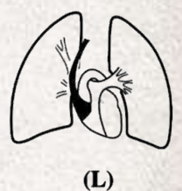

(Z).

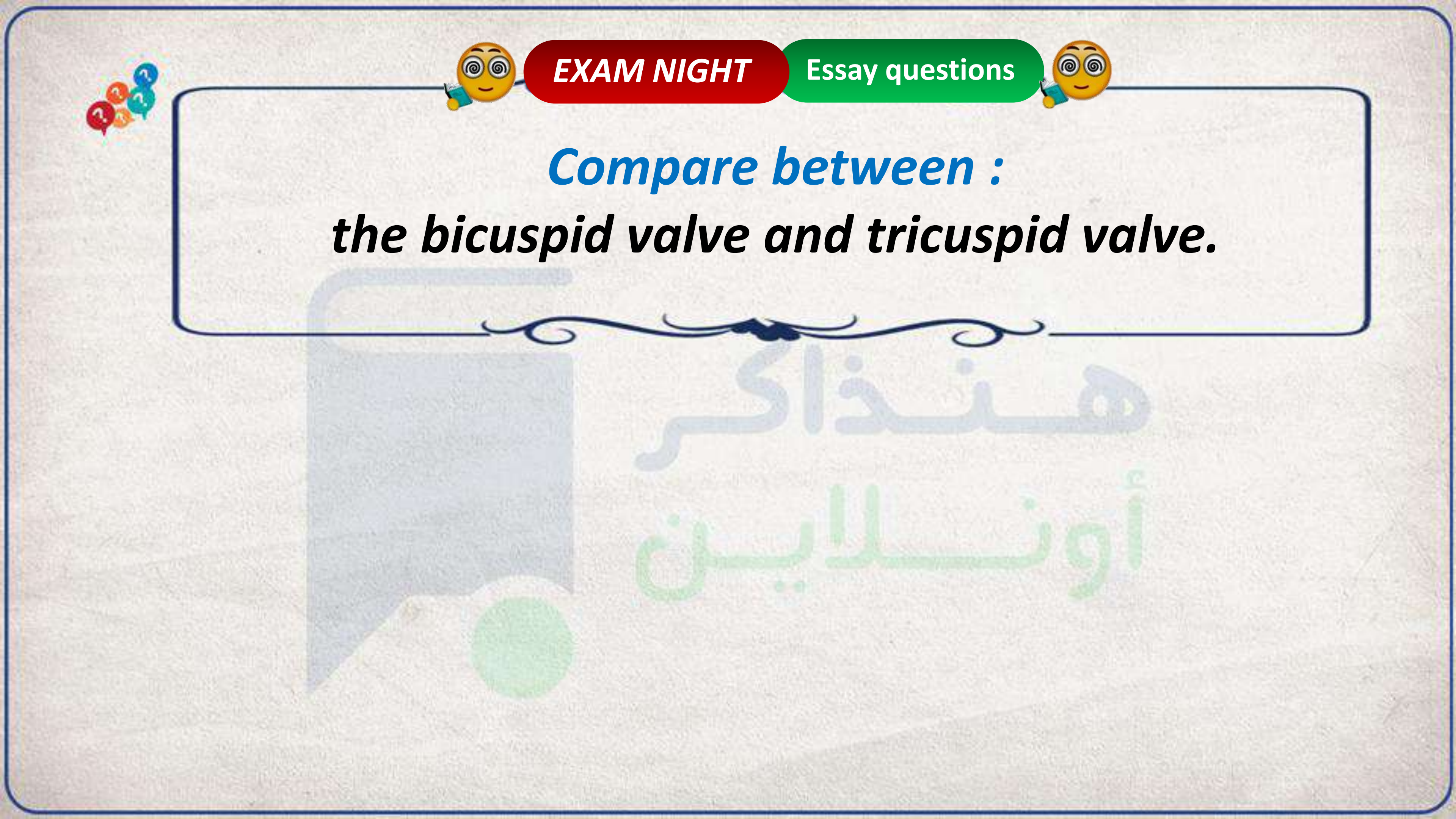

(L).


(X)


(Y)


(Z)


(L)


EXAM NIGHT
Essay questions
Compare between :
the bicuspid valve and tricuspid valve.
هنذاكر
أونلاين



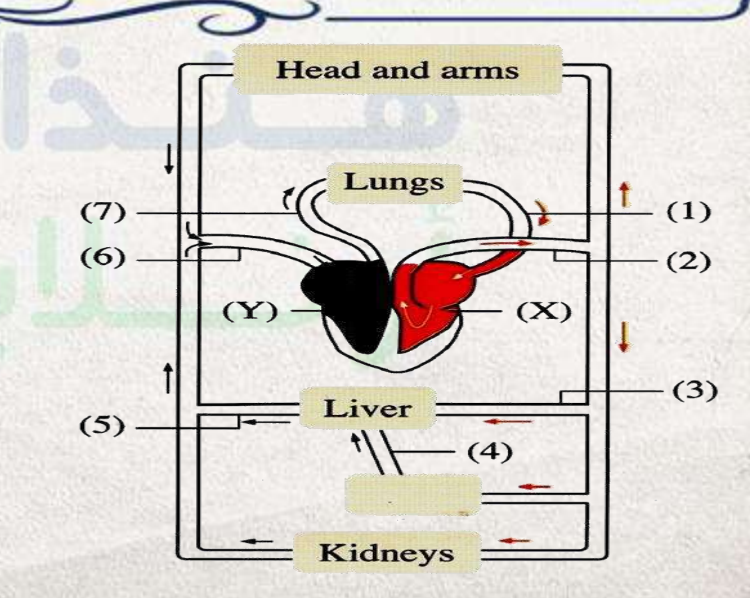

EXAM NIGHT **Essay questions**



Study the following figure, then answer :

(a) Mention the number of the blood vessel that :

1. Connected with the blood vessels of pancreas, spleen, and stomach ?





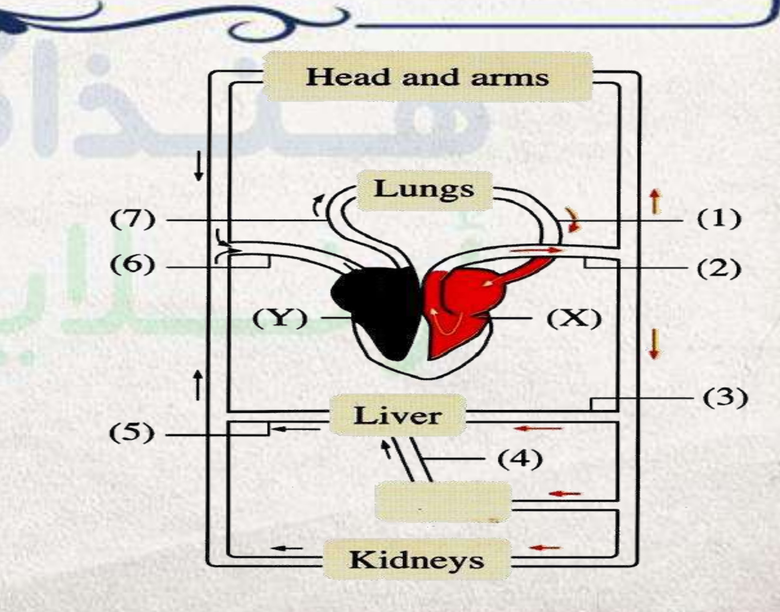

EXAM NIGHT Essay questions



Study the following figure, then answer :

(a) Mention the number of the blood vessel that :

2. Carries the highest level of oxyhaemoglobin.



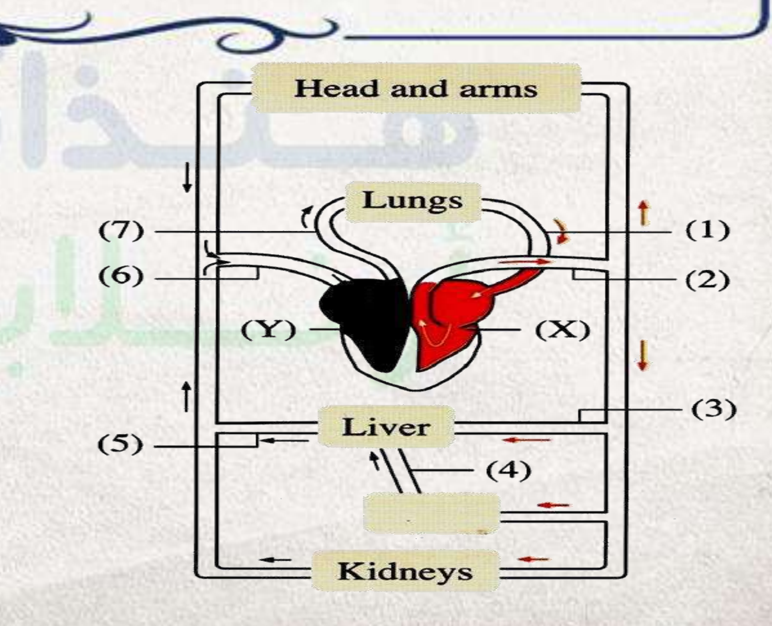


EXAM NIGHT
Essay questions


Study the following figure, then answer :

(a) Mention the number of the blood vessel that :

3. Contains the highest level of amino acids after eating a meal.







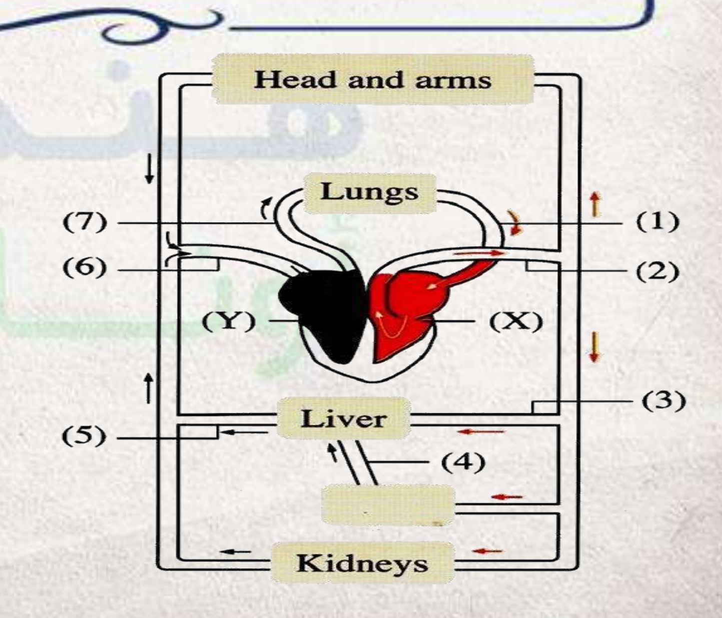
EXAM NIGHT

Essay questions



Study the following figure, then answer :

(b) Which of them (X) or (Y) contains the bicuspid valve ?





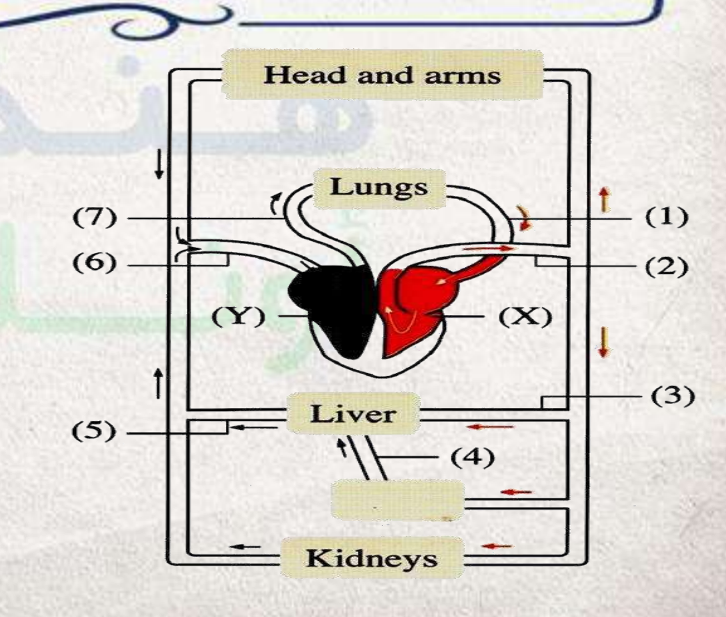


EXAM NIGHT **Essay questions**



Study the following figure, then answer :

(c) What is the side of heart that contains oxygenated blood (X) or (Y) ?







EXAM NIGHT | **Essay questions**



The following figure represents the most important defensive systems in the human body :

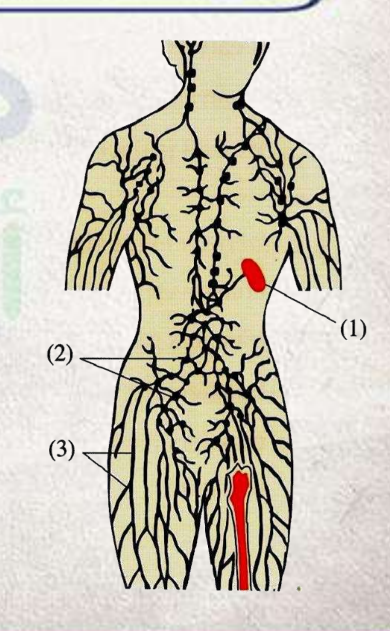
(a) What would happen in case of the removal of structure no. (1) ?



EXAM NIGHT Essay questions


The following figure represents the most important defensive systems in the human body :

(b) Illustrate the relation between structure no. (2) and the number of white blood corpuscles, on the exposure to an infection.





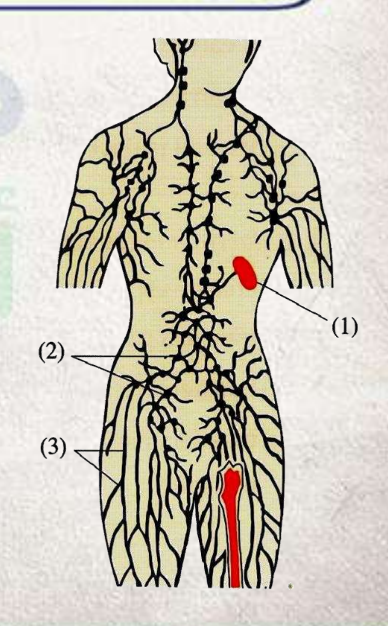


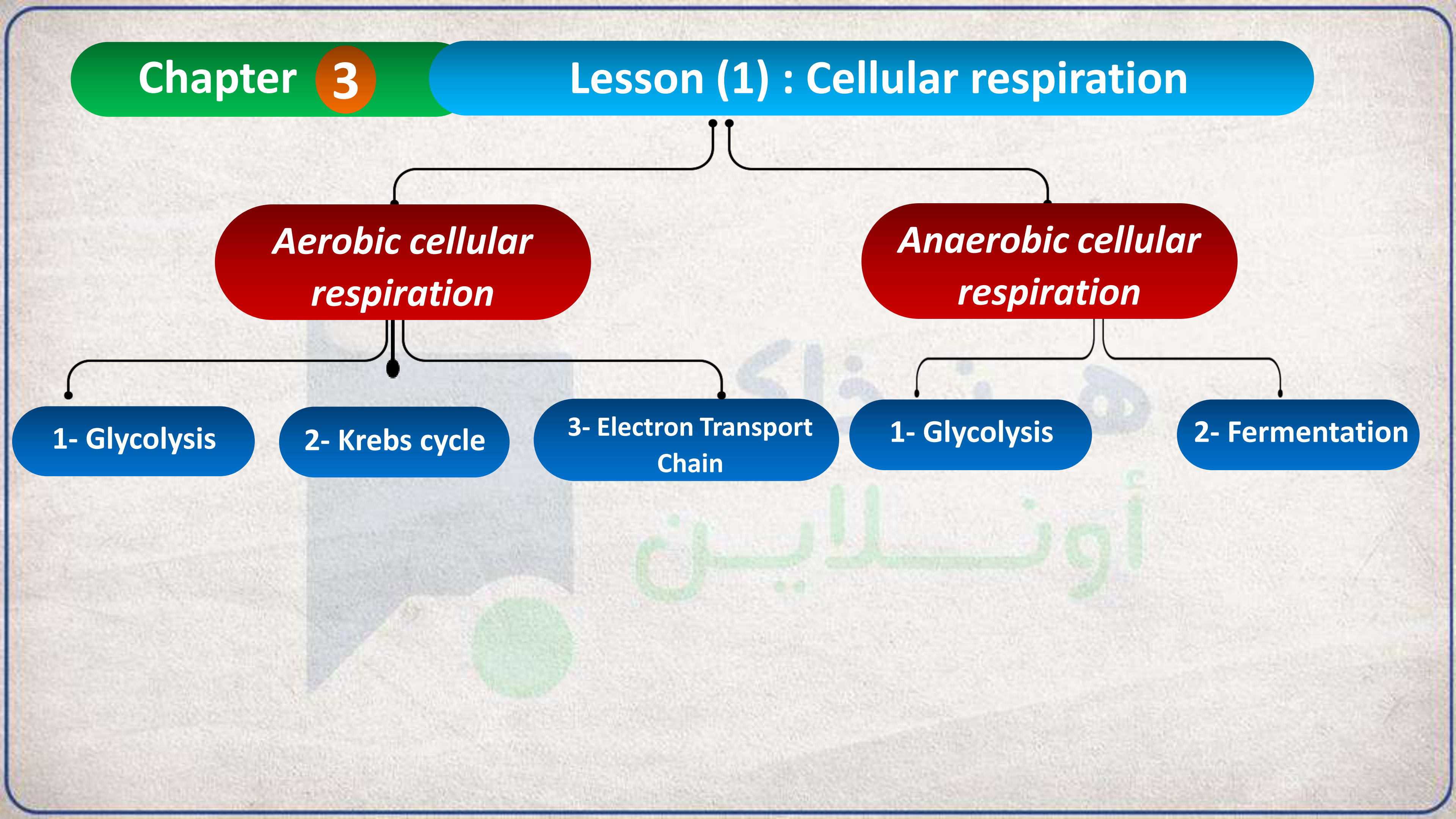
Essay questions



The following figure represents the most important defensive systems in the human body :

(c) What is the difference between the fluid that is present in structure no. (3) and blood plasma ?




Chapter 3
Lesson (1) : Cellular respiration
Aerobic cellular respiration
Anaerobic cellular respiration
1- Glycolysis
2- Krebs cycle
3- Electron Transport Chain
1- Glycolysis
2- Fermentation

Aerobic cellular respiration

1- Glycolysis

Glucose molecule (6C)
ATP
ADP
Glucose 6-phosphate (6C)
Fructose 6-phosphate (6C)
ATP
ADP
Fructose 1,6-diphosphate (6C)
2 phosphoglyceraldehyde molecules (3C)
4ADP + 4P
$2NAD^+$
4ATP
2NADH
2 pyruvic acid molecules (3C)
Anaerobic respiration
2 lactic acid molecules
2 ethyl alcohol molecules + 2 carbon dioxide molecules
Aerobic respiration
Krebs cycle

2- Krebs cycle

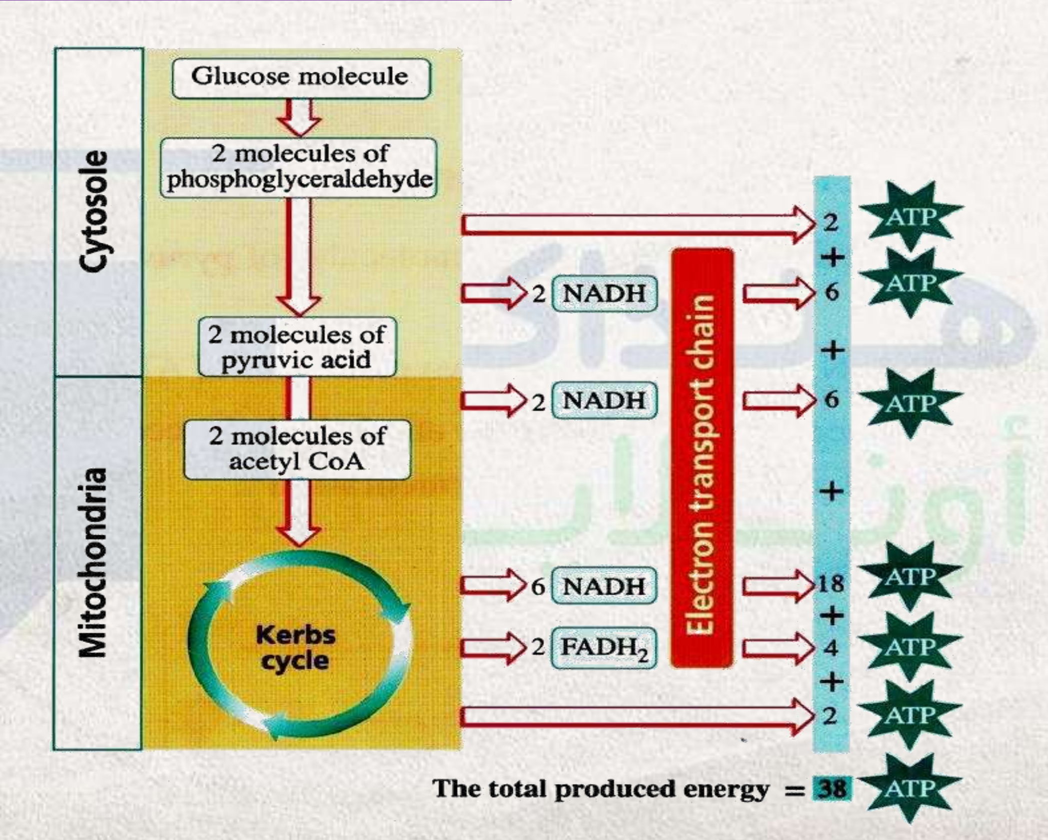
2 pyruvic acid molecules (3C) + 2CoA
Proteins
Amino acids
Fats
Fatty acids
$2NAD^+$
2NADH
$2CO_2$
2 acetyl CoA molecules (2C)
CoA
Oxaloacetic acid (4C)
Citric acid (6C)
NADH
NAD^+
NAD^+
NADH
CO_2
Malic acid (4C)
Ketoglutaric acid (5C)
$FADH_2$
FAD
ATP
ADP
NAD^+
NADH
CO_2
Succinic acid (4C)

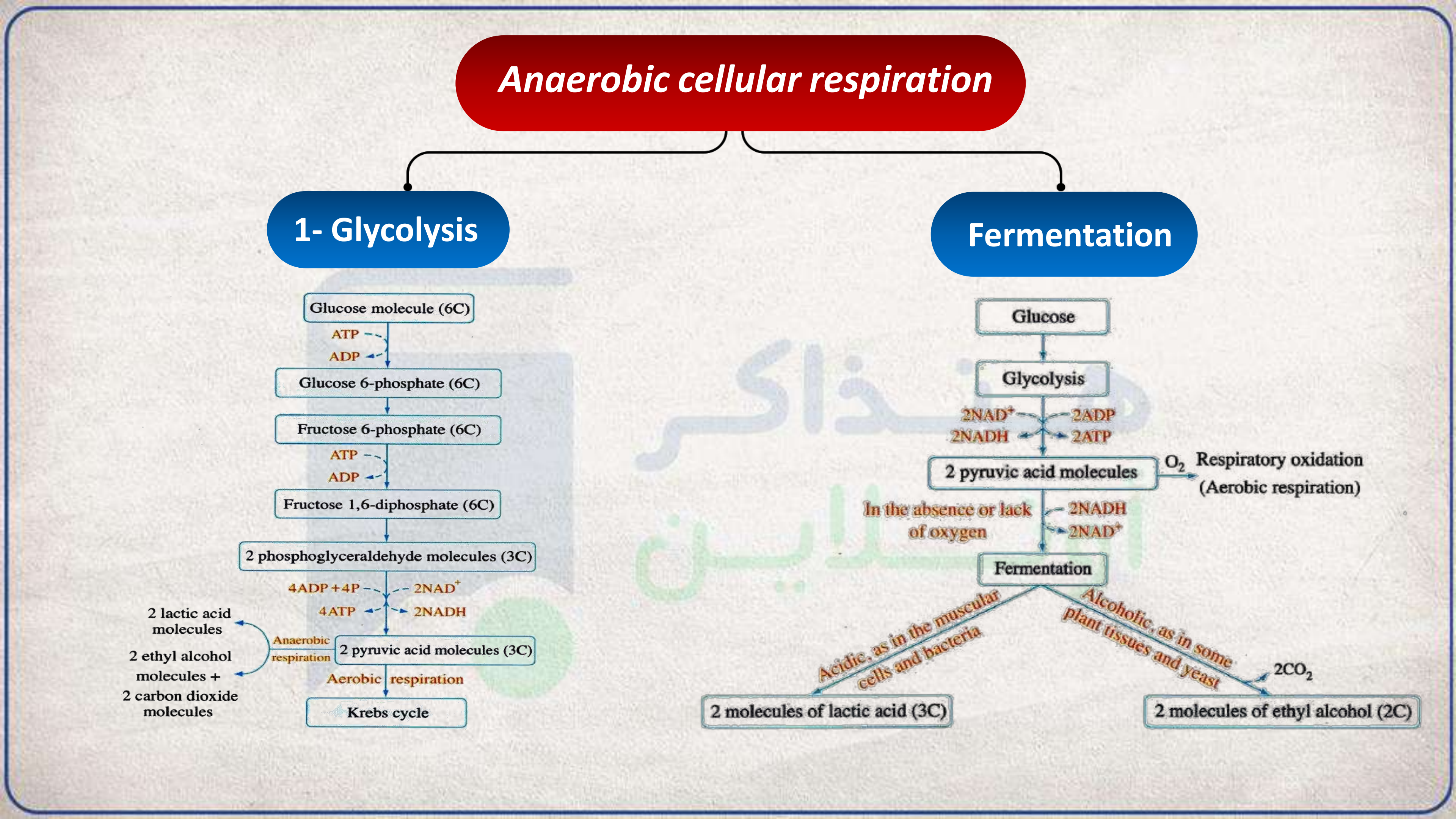
3- Electron Transport Chain

Hydrogen atoms divide into protons and electrons
H_2
$2H^+$
$2e^-$
$\frac{1}{2}O_2$
ATP
ATP + P
ATP
ADP + P
ATP
ADP + P
The released energy is used in the production of ATP
H_2O

Calculation the number of ATP molecules

❖ ***This is illustrated in the following diagram :***





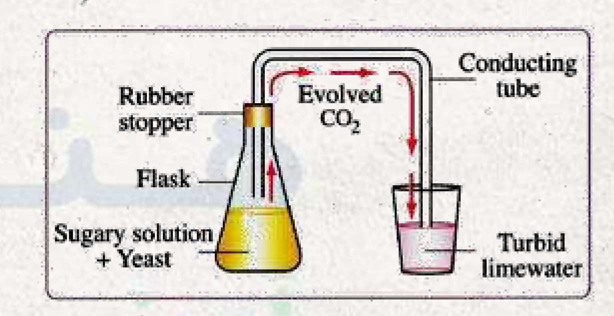
Anaerobic cellular respiration
1- Glycolysis
Fermentation
Glucose molecule (6C)
ATP
ADP
Glucose 6-phosphate (6C)
Fructose 6-phosphate (6C)
ATP
ADP
Fructose 1,6-diphosphate (6C)
2 phosphoglyceraldehyde molecules (3C)
4ADP + 4P
$2NAD^+$
4ATP
2NADH
2 lactic acid molecules
Anaerobic respiration
2 ethyl alcohol molecules +
2 carbon dioxide molecules
2 pyruvic acid molecules (3C)
Aerobic respiration
Krebs cycle
Glucose
Glycolysis
$2NAD^+$
2ADP
2NADH
2ATP
2 pyruvic acid molecules
O_2
Respiratory oxidation
(Aerobic respiration)
In the absence or lack of oxygen
2NADH
$2NAD^+$
Fermentation
Acidic, as in the muscular cells and bacteria
Alcoholic, as in some plant tissues and yeast
$2CO_2$
2 molecules of lactic acid (3C)
2 molecules of ethyl alcohol (2C)

Experiment *The proof of anerobic respiration process*

(The proof of alcoholic fermentation process)

1. Steps :

(1) Put a sugary solution (or molasses that is diluted with water by ratio of 1 : 2 respectively) in a conical flask.



(2) Add a piece of yeast into the flask and mix it with the solution thoroughly.

(3) Close the flask with a stopper of rubber through which a conducting tube passes and dip the free end of the tube into a beaker containing lime water.

(4) Leave the apparatus in a warm place for several hours.

Experiment *The proof of anerobic respiration process*

(The proof of alcoholic fermentation process)

2. Observation :

(1) Gas bubbles are seen on the surface of the solution in the flask.

(2) The release of alcohol odour from the flask.

(3) Limewater becomes turbid.

Experiment *The proof of anerobic respiration process*

(The proof of alcoholic fermentation process)

3. Conclusion :

(1) Yeast performs an anaerobic respiration process. So, CO_2 gas is evolved that causes the turbidity of limewater, as well as the sugary solution turns into an alcohol.

(2) Yeast performs the anaerobic respiration (in the absence of oxygen) and this is called alcoholic fermentation.

❖ *From the previous, we can make the following comparisons :*

Aerobic respiration	Anaerobic respiration
✓ It requires the presence of oxygen for the combination of electrons and protons together, then with oxygen to form water. ✓ Part of it occurs in the cytoplasm and the rest in the mitochondria. ✓ The pyruvic acid molecule is converted into a molecule of acetyl CoA ✓ The whole energy that is present in glucose molecule is released. ✓ It produces a high amount of energy (38 ATP). ✓ The final products are simple substances with low energy (H_2O and CO_2).	✓ It doesn't require the presence of oxygen, but it occurs by the help of a group of enzymes. ✓ All of it occur in the cytoplasm only. ✓ The pyruvic acid molecule is converted into either ethyl alcohol (as in yeast) or lactic acid (as in bacteria and animal muscles). ✓ Part of the energy that is present in glucose molecule is released. ✓ It produces a low amount of energy (2 ATP). ✓ The final products are organic substances (ethyl alcohol or lactic acid).

❖ *From the previous, we can make the following comparisons :*

Acidic fermentation	Alcoholic fermentation
✓ It results from the reduction of pyruvic acid into lactic acid. ✓ It occurs in the animal cells (especially muscular cells) and bacteria. ✓ The acidic fermentation : - In muscles : causes their fatigue. - In bacteria : many dairy industries depend on it, such as cheese, butter, and yoghurt.	✓ It results from the reduction of pyruvic acid into ethyl alcohol (ethanol) and CO_2 ✓ It occurs in yeast and some plant tissues. ✓ It has many important uses in industries, such as alcohol and bread industries.





EXAM NIGHT

Multiple choice questions



The actual splitting during glucose oxidation is occurred to ………….. molecule.

- glucose
- phosphoglyceraldehyde
- fructose 1,6-diphosphate
- glucose 6-phosphate





EXAM NIGHT

Multiple choice questions



Which of the following processes is considered the source of energy in all the living organisms ?

- **Formation of ATP molecules in the plant cells.**
- **Photosynthesis in the green plants.**
- **Formation of ATP molecules in the animal cells.**
- **Formation of ATP molecules in the plant and animal cells.**



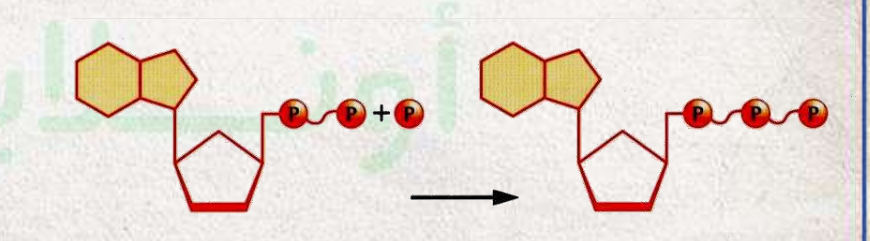


EXAM NIGHT | Multiple choice questions



The following reaction is occurred during glycolysis when ……….. is formed.

- glucose 6-phosphate
- fructose 6-phosphate
- fructose 1,6-diphosphate
- pyruvic acid







EXAM NIGHT Multiple choice questions



What is the number of NADH compounds that are resulted from two cycles of citric acid ?

 3

 6

 12

 18





EXAM NIGHT | Multiple choice questions



The fatty acids enter in the cellular respiration in the form of …………… molecule.

- (1C)
- (2C)
- (3C)
- (4C)



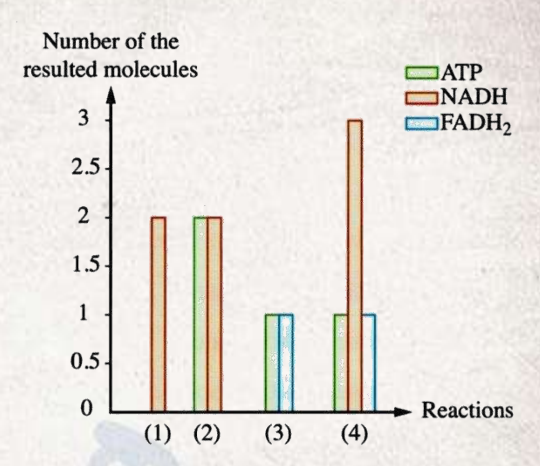


EXAM NIGHT

Multiple choice questions



The opposite graph illustrates some products of aerobic cellular respiration reactions, which of the following is formed during glycolysis and Krebs cycle respectively ?



- (1) &(3).
- (2) & (4).
- (1) & (4).
- (4) & (3).





EXAM NIGHT

Multiple choice questions



Which of the following compounds loses phosphate groups during glycolysis ?

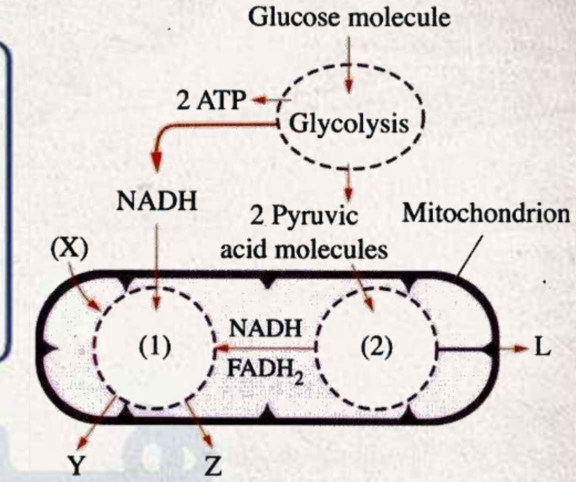
- Glucose 6-phosphate.
- Fructose 6-phosphate.
- Fructose 1,6-diphosphate.
- Phosphoglyceraldehyde.



EXAM NIGHT | Multiple choice questions



From the opposite diagram :



(1) Which of the following is correct ?

(A).

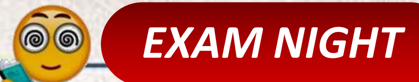
(B).

(C).

(D).

	(X)	(Y)	(Z)	(L)
a	CO_2	ATP	H_2O	O_2
b	H_2O	CO_2	O_2	ATP
c	ATP	O_2	CO_2	H_2O
d	O_2	ATP	H_2O	CO_2



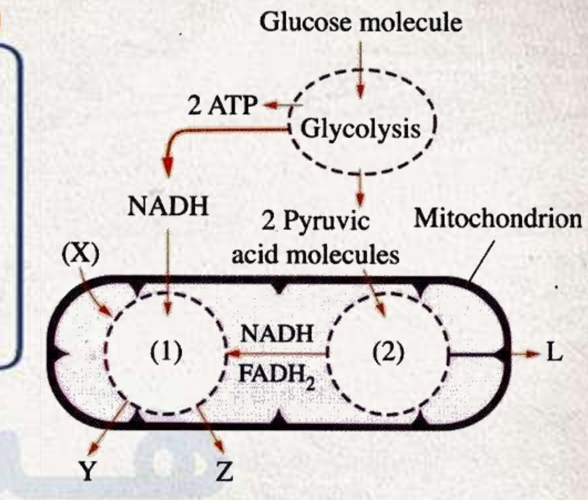


Multiple choice questions



From the opposite diagram :

(2) In process (1), ………. occurs.



- coenzymes oxidation
- coenzymes reduction
- releasing of CO_2
- releasing of O_2



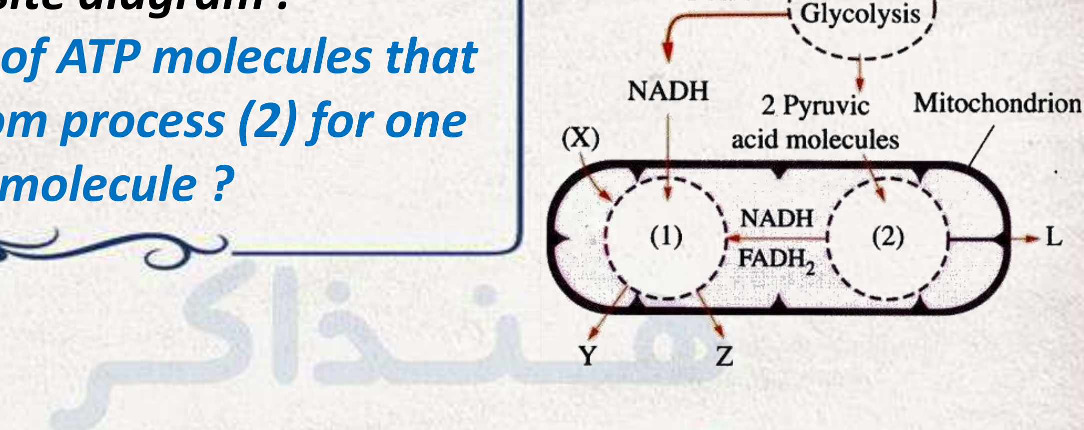
EXAM NIGHT

Multiple choice questions



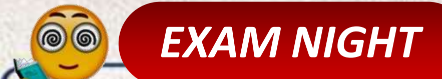
From the opposite diagram :

(3) What is the number of ATP molecules that are resulted directly from process (2) for one pyruvic acid molecule ?



- 1
- 2
- 34
- 38

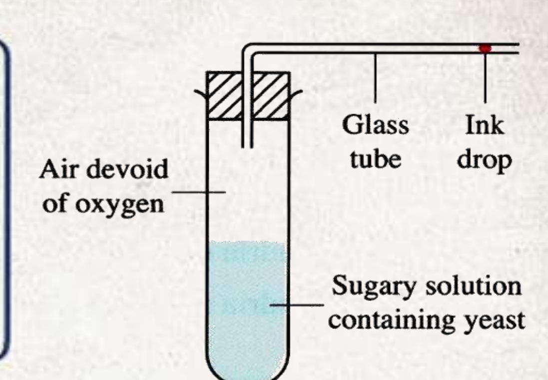




EXAM NIGHT | **Multiple choice questions**



The opposite figure illustrates a device used in the detection of respiration in yeast, what will happen to the ink drop ?



- It moves quickly inwards.
- It moves slowly inwards.
- It moves outwards.
- Still constant.





EXAM NIGHT





Study the following diagram, then determine :

$$H_2O + CO_2 \xrightarrow{\text{Process (X)}} \text{Glucose} \xrightarrow{\text{Process (Y)}} 38\ \text{ATP}$$

Which of the following depends on the two processes (X) and (Y) for obtaining energy ?

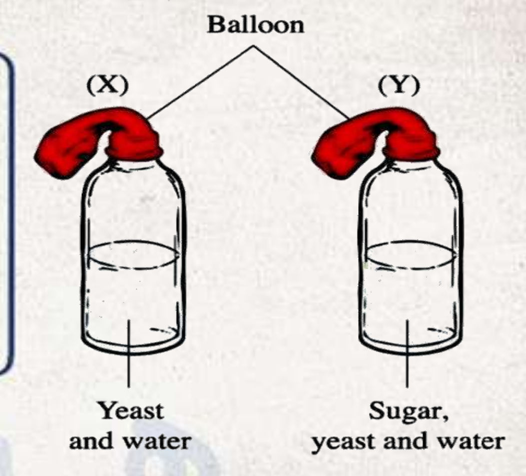
- **Bean.**
- **Yeast.**
- **Saprophytic bacteria.**
- ***Amoeba*.**



EXAM NIGHT **Multiple choice questions**



The opposite figure illustrates an experiment for the detection of the anaerobic respiration, where two bottles with two balloons are put inside warm room, which choice in the following table expresses what happens for the two balloons after 24 hours ?



(A).

(B).

(C).

(D).

	Balloon (X)	Balloon (Y)
a	Inflate	Inflate
b	Inflate	No change
c	No change	Inflate
d	No change	No change





EXAM NIGHT

Multiple choice questions



The number of ATP molecules that are resulted from the oxidation of one glucose molecule in a bacterial cell anaerobically is ………

 2

 34

 36

 38




EXAM NIGHT | Multiple choice questions



All the following conversions include the reduction process of the coenzymes, except on the formation of …………………

- pyruvic acid from phosphoglyceraldehyde.
- succinic acid from ketoglutaric acid.
- malic acid from succinic acid.
- lactic acid from pyruvic acid.



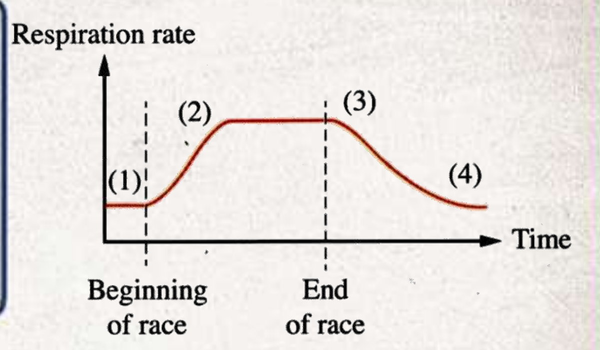


EXAM NIGHT

Multiple choice questions



The opposite figure illustrates the respiration rate of a player before, during, and after participating in a running race, at which point her body cells contain the highest amount of lactic acid ?



- (1).
- (2).
- (3).
- (4).





EXAM NIGHT | Multiple choice questions



In an experiment, a researcher put a primitive organism in a medium with variable temperature. Which of the following graphs expresses the relation between the temperature of the medium and the rate of the cellular respiration ?

(a) Rate of cellular respiration / Temperature: 5 10 15 20 25 30 35

(b) Rate of cellular respiration / Temperature: 5 10 15 20 25 30 35

(c) Rate of cellular respiration / Temperature: 5 10 15 20 25 30 35

(d) Rate of cellular respiration / Temperature: 5 10 15 20 25 30 35

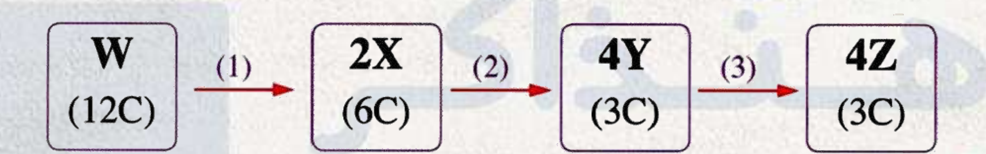



EXAM NIGHT | **Essay questions**



In the following diagram, process no. (1) occurs inside the small intestine, while the two processes no. (2) and (3) occur inside the living cell, where compound (Z) increases, when feeling the muscular fatigue, in the light of this, answer :

(a) What are the compounds from (W) : (Z) ? And what are the processes from no. (1) : (3) ?





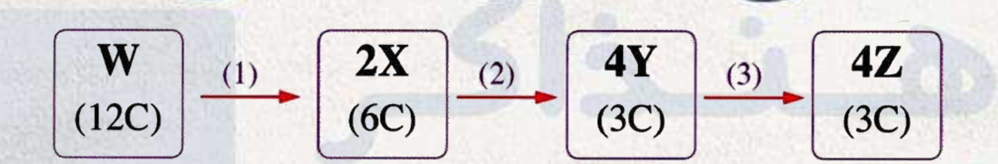


EXAM NIGHT **Essay questions**



In the following diagram, process no. (1) occurs inside the small intestine, while the two processes no. (2) and (3) occur inside the living cell, where compound (Z) increases, when feeling the muscular fatigue, in the light of this, answer :

(b) What is the reason for decreasing the carbon atoms into half, on the occurrence of two steps no. (1) and (2) ?







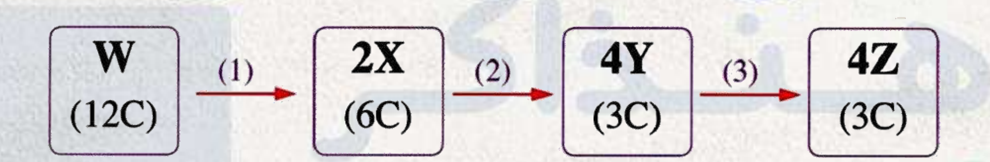
EXAM NIGHT

Essay questions



In the following diagram, process no. (1) occurs inside the small intestine, while the two processes no. (2) and (3) occur inside the living cell, where compound (Z) increases, when feeling the muscular fatigue, in the light of this, answer :

(c) What are the conditions required for the occurrence of steps from no. (1) : (3) ?





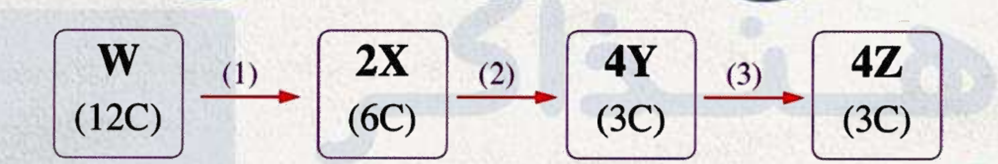


EXAM NIGHT **Essay questions**



In the following diagram, process no. (1) occurs inside the small intestine, while the two processes no. (2) and (3) occur inside the living cell, where compound (Z) increases, when feeling the muscular fatigue, in the light of this, answer :

(d) What is the number of ATP molecules that are resulted from one molecule of (W) through these processes ?









Explain :

the aerobic respiration could occur without forming the pyruvic acid.





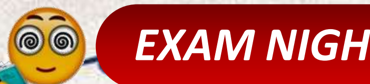


What happens in case of :

the exposure of some types of bacteria to a lack or absence of oxygen ?







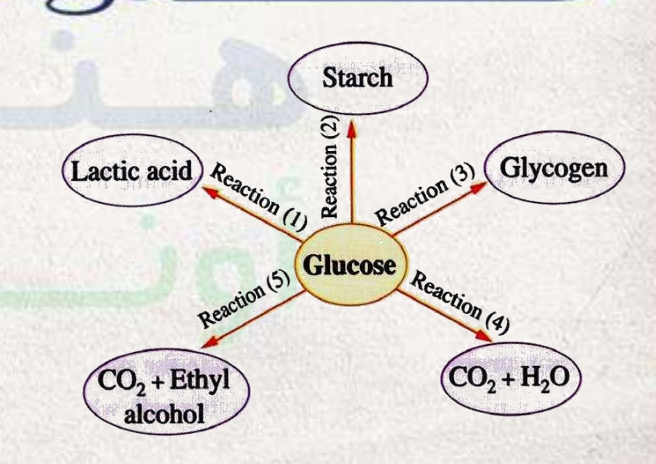
EXAM NIGHT | Essay questions



From the following diagram :

Which of the reactions from no. (1) : (5) represents :

(a) Aerobic respiration.





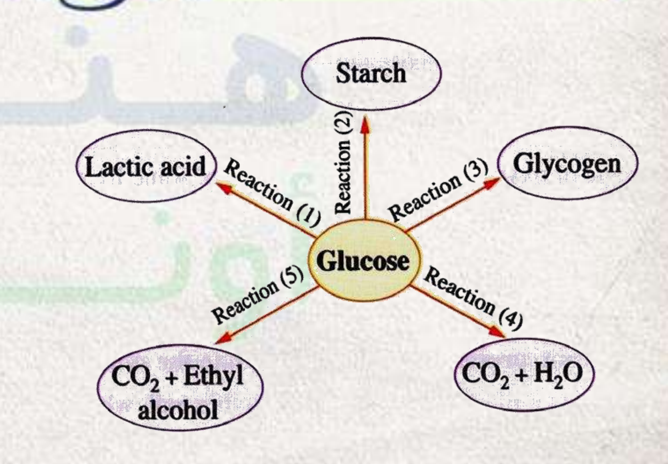




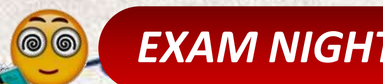
From the following diagram :

Which of the reactions from no. (1) : (5) represents :

(b) A change occurs inside the liver.







EXAM NIGHT

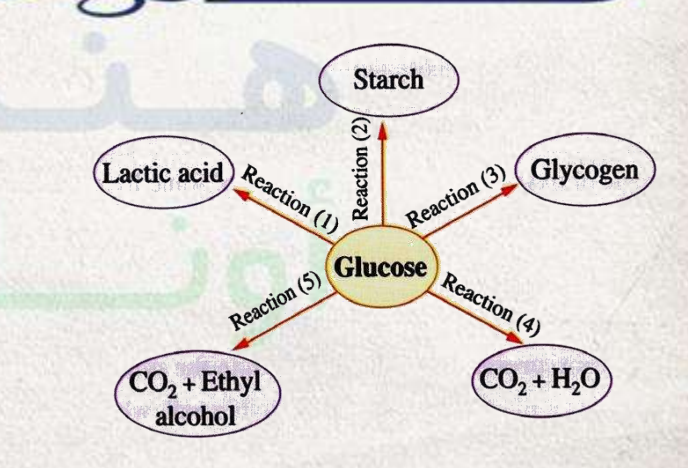
Essay questions



From the following diagram :

Which of the reactions from no. (1) : (5) represents :

(c) Anaerobic respiration in muscles.



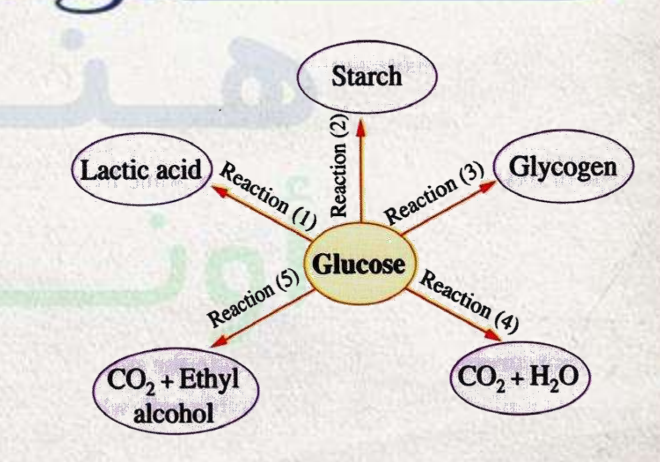





From the following diagram :

Which of the reactions from no. (1) : (5) represents :

(d) Anaerobic respiration in yeast.





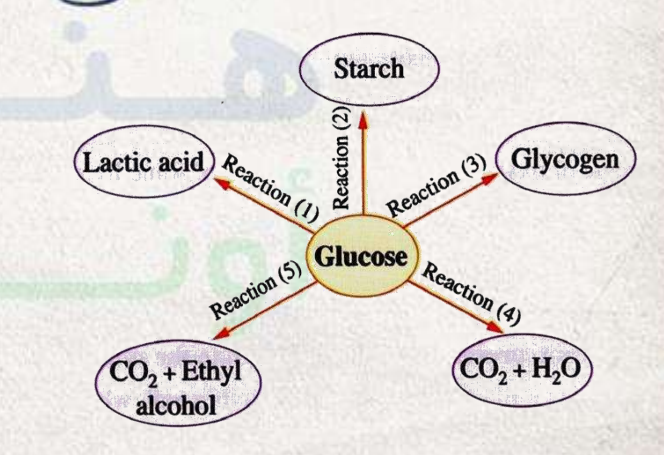


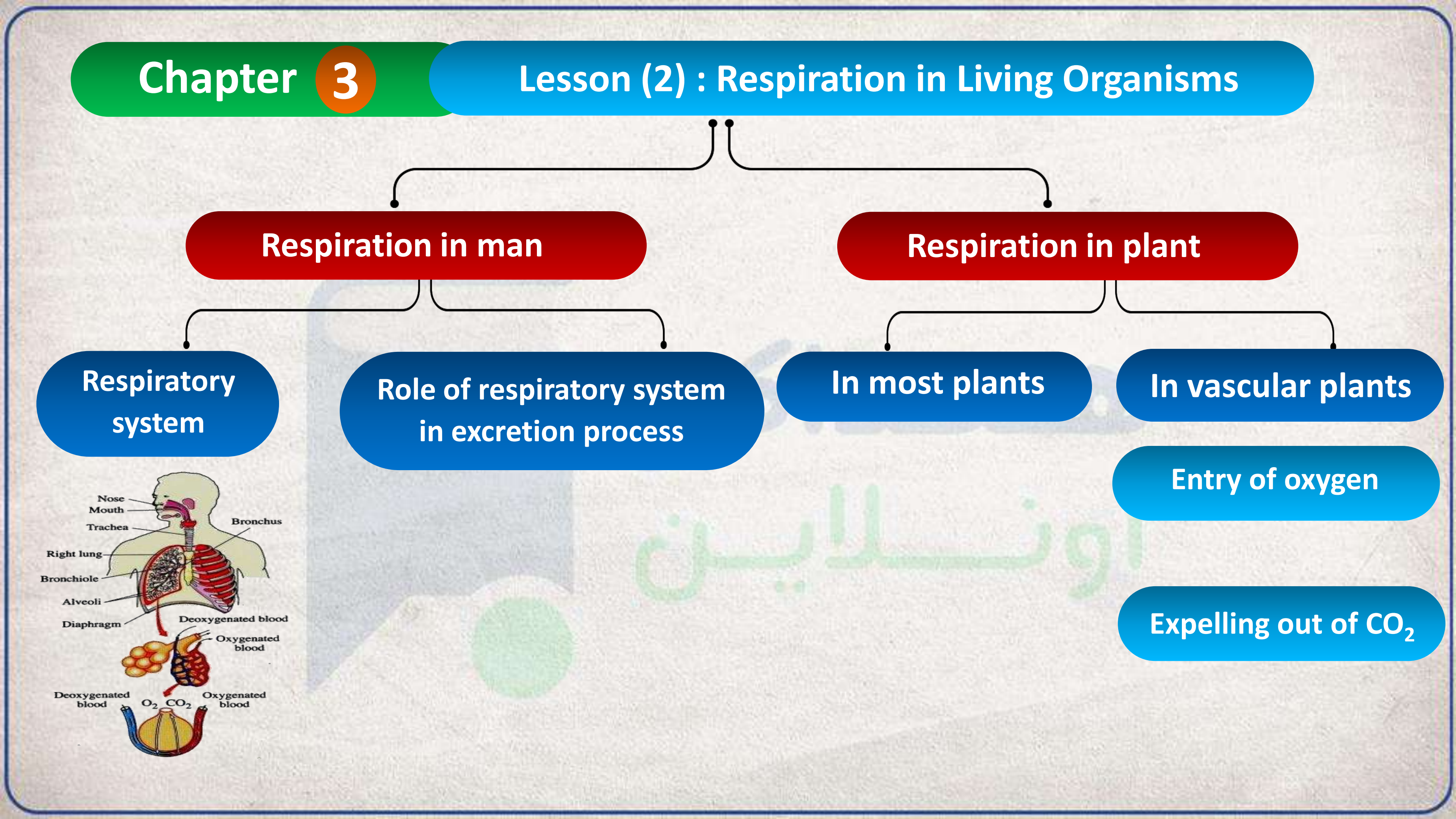


From the following diagram :

Which of the reactions from no. (1) : (5) represents :

(e) A reaction that forms an organic substance inside the plant (in storage sites).





Chapter 3
Lesson (2) : Respiration in Living Organisms
Respiration in man
Respiration in plant
Respiratory system
Role of respiratory system in excretion process
In most plants
In vascular plants
Entry of oxygen
Expelling out of CO_2
Nose
Mouth
Trachea
Bronchus
Right lung
Bronchiole
Alveoli
Diaphragm
Deoxygenated blood
Oxygenated blood
Deoxygenated blood
O_2 CO_2
Oxygenated blood

Respiration in vascular plants

❖ **Oxygen gas reaches the cells through various passageways , such as :**

1- The stomata of leaf.

2- The phloem passageways.

3- The roots.

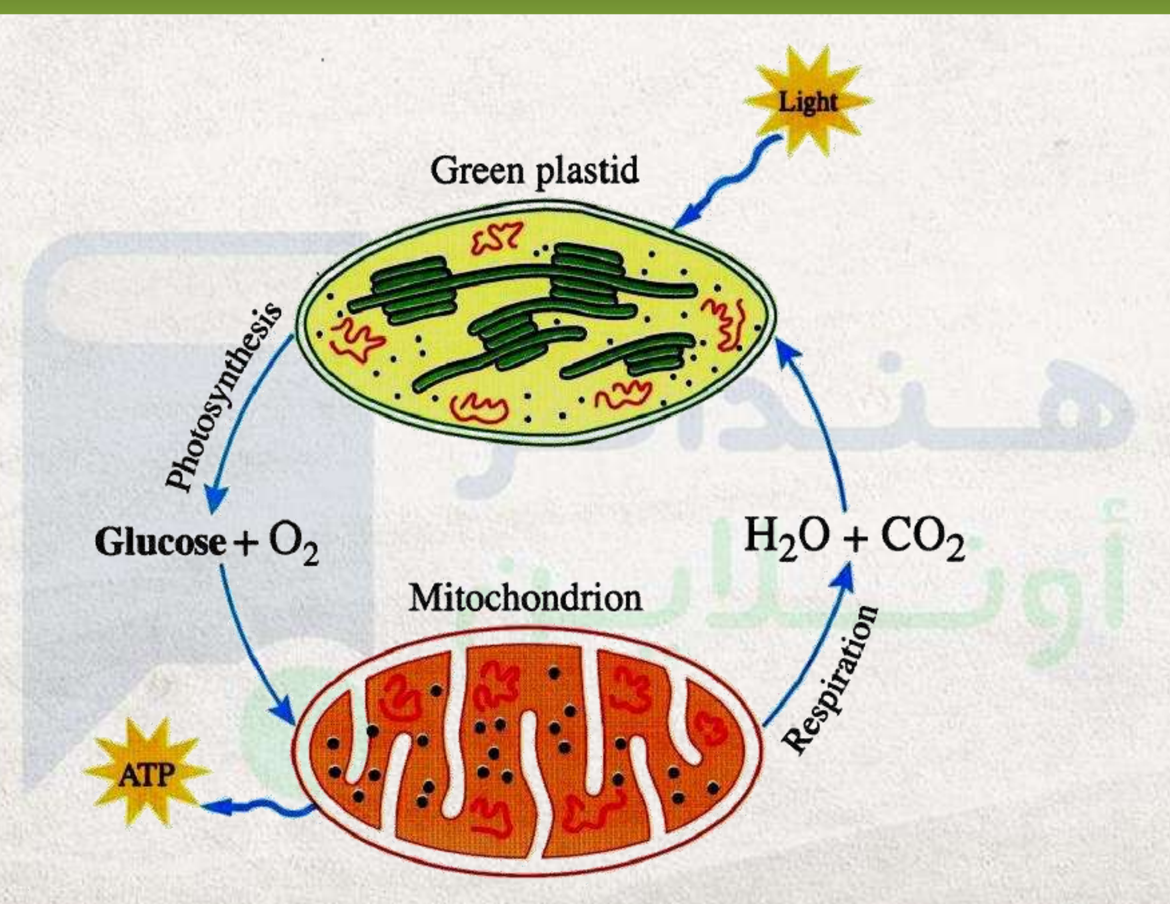
4- The stomata of green plant stem and the lenticels or any cracks in the bark of woody stems.

❖ **Methods of expelling carbon dioxide gas (that is produced from the respiration) to outside :**

1- By direct diffusion, in the cells which are on the surface, where they are exposed directly to air or soil.

2- For deep seated cells, carbon dioxide gas passes to the xylem or phloem tissues, then to the stomata and to the external environment.

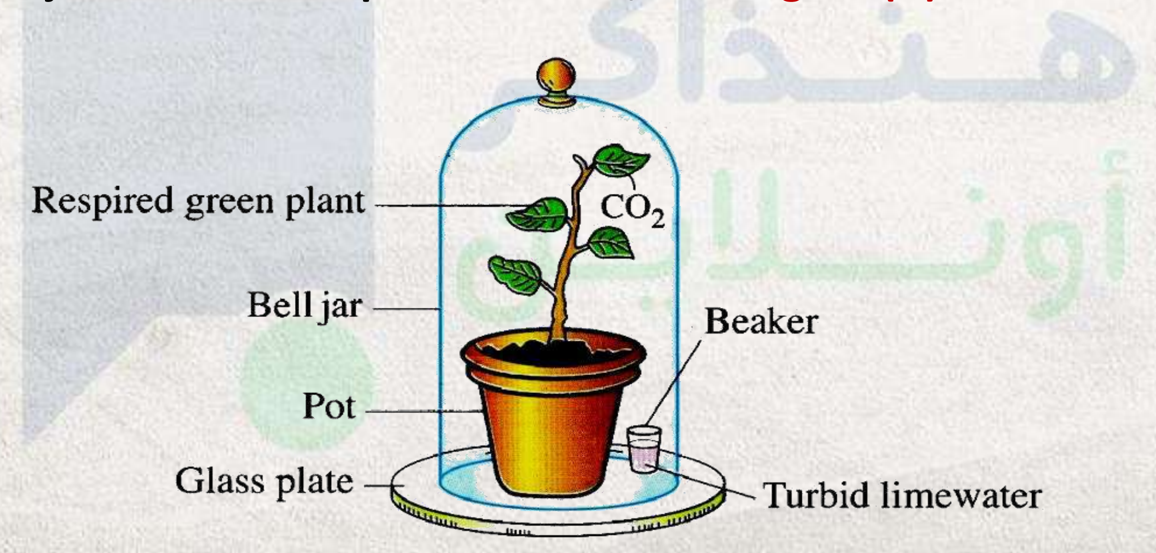
Relationship between photosynthesis and respiration processes in the plant



Experiment Respiration in green plant parts

1. Procedures :

(1) Bring a green potted plant and place it on a glass plate and put a small beaker containing clear limewater next to it, then invert a glass bell jar over them, then cover the bell jar with a black piece of cloth, as in figure (A).



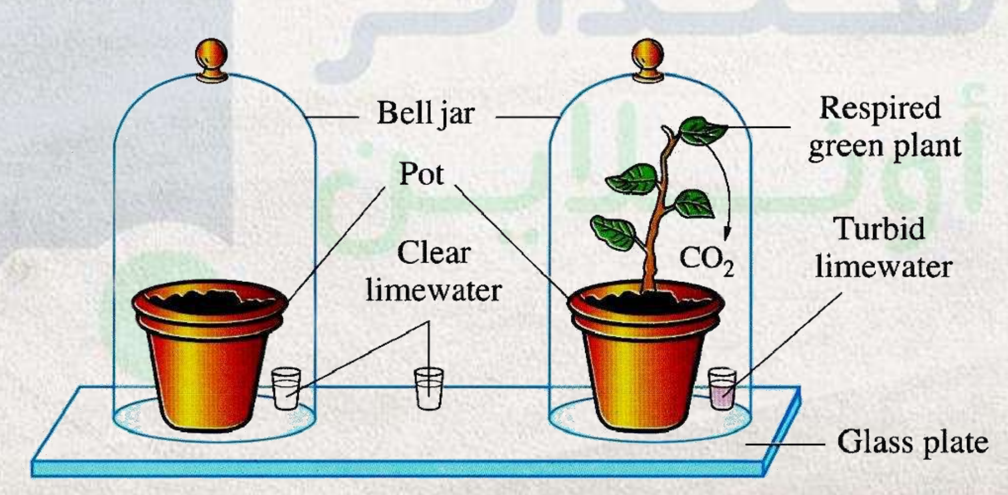
Experiment Respiration in green plant parts

1. Procedures :

(2) Prepare a similar apparatus with a pot that is empty of any cultivated plant.

(3) Put some clear limewater in another small beaker.

(4) Leave the two apparatuses and the beaker in between them for some time, as in figure (B).



Note :-

- The bell jar is covered by a black piece of cloth, in order to keep the light away from the green plant and stop the photosynthesis process which consumes CO_2 that is present in the air of bell jar or that released from the respiration.

Experiment Respiration in green plant parts

2. Observation :

- ✓ Lime water becomes turbid in step no. (1) only, and it doesn't become turbid in steps no. (2) and no. (3).

3. Explanations :

- ✓ In step no. (1), the green plant respires and produces carbon dioxide gas which caused the turbidity of limewater in the beaker.

- ✓ In steps no. (2) and no. (3), the limewater in the other two beakers shows no turbidity, due to the small percentage of carbon dioxide gas, either in the air of bell jar or in the atmospheric air.



Respiration in green plant parts

4. Conclusion :

✓ The green plant performs respiration process and releases carbon dioxide gas, as a result of this process.



EXAM NIGHT

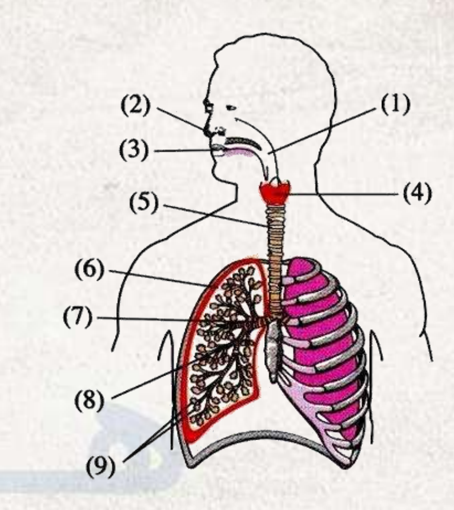
Multiple choice questions



In the opposite figure :

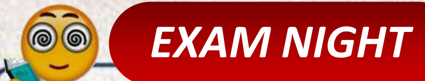
(1) The air that enters into the two lungs is moistened in ………….





- part no. (2) only.
- part no. (3) only.
- part no. (4) only.
- part no. (1) and (2) only.





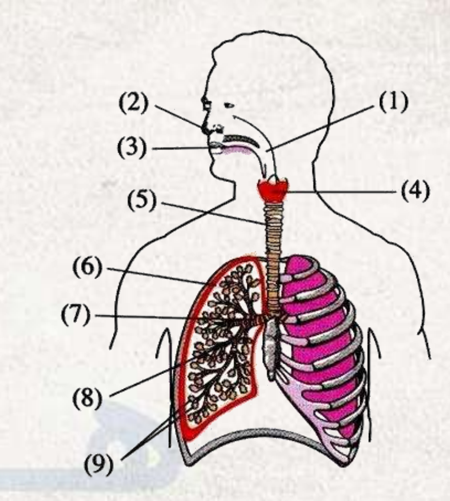
EXAM NIGHT

Multiple choice questions



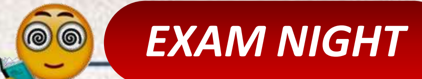
In the opposite figure :

(2) The mucus is present in ....



- part no. (1) only.
- part no. (2) only.
- part no. (7) only.
- part no. (2) and (7) only.



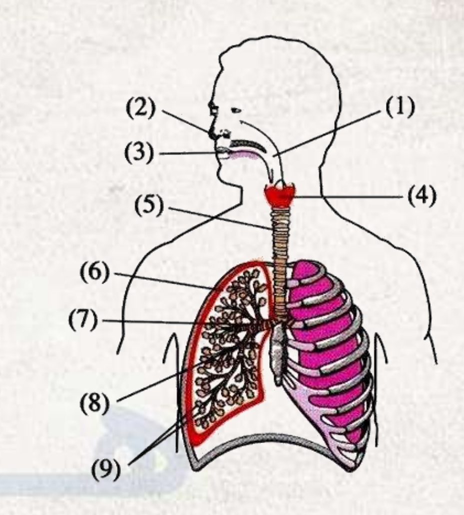


EXAM NIGHT

Multiple choice questions



In the opposite figure :



(3) The part that represents the voice box is no. ....

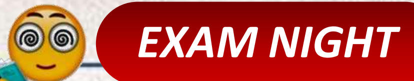
 **(3).**

 **(4).**

 **(5).**

 **(7).**

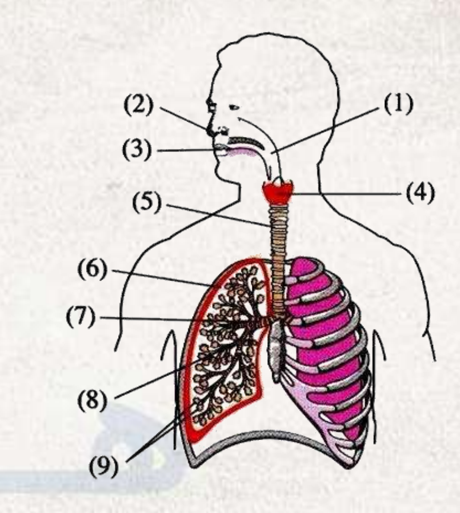




Multiple choice questions



In the opposite figure :

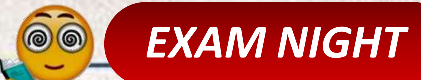


(4) Which of the following structures doesn't consist of cartilages ?



- (5).
- (6).
- (7).
- (8).





Multiple choice questions



In the opposite figure :



(5) Which of the following structures is/are rich in blood capillaries ?



part no. (2) only.



part no. (9) only.



part no. (2) and (9).

part no. (2) and (8).

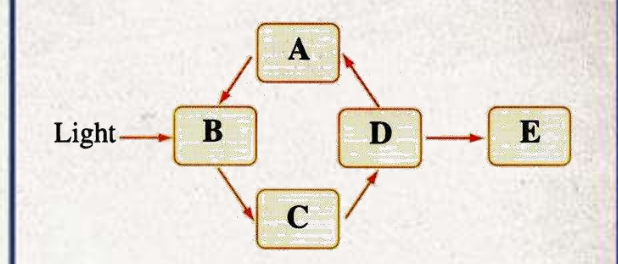


EXAM NIGHT

Multiple choice questions



The opposite figure illustrates one of the biological cycles that happen in the plant, if you know that letter (A) represents $CO_2 + H_2O$, what do letters (B, C, D, and E) represent in the figure ?



(A).

(B).

(C).

(D).

	B	C	D	E
a	Chloroplast	ATP	Mitochondria	Glucose + O_2
b	Chloroplast	Glucose + O_2	Mitochondria	ATP
c	Mitochondria	Glucose + O_2	Chloroplast	ATP
d	Mitochondria	ATP	Chloroplast	Glucose + O_2



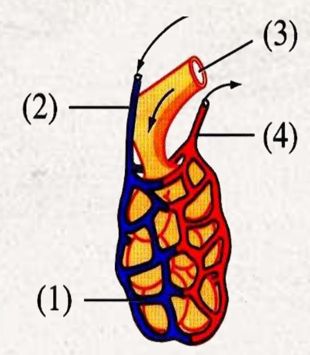


EXAM NIGHT



Multiple choice questions

From the opposite figure, which of the following structures contains the highest concentration of CO_2 gas ?



- (1).
- (2).
- (3).
- (4).




EXAM NIGHT | Multiple choice questions



Which of the following graphs illustrates the relation between the rate of oxygen spreading and the thickness of the alveolus wall ?

Rate of O_2 spreading
Wall thickness
ⓐ

Rate of O_2 spreading
Wall thickness
ⓑ

Rate of O_2 spreading
Wall thickness
ⓒ

Rate of O_2 spreading
Wall thickness
ⓓ

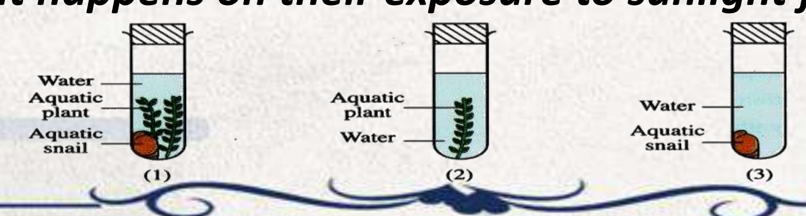


EXAM NIGHT

Multiple choice questions



The following figures illustrate three test tubes, which of the following choices shows what happens on their exposure to sunlight for several hours ?





(A).

(B).

(C).

(D).

	Test tube (1)	Test tube (2)	Test tube (3)
a	Increasing O_2 level	Increasing CO_2 level	No change in O_2 and CO_2 levels
b	Increasing CO_2 level	Increasing O_2 level	No change in O_2 and CO_2 levels
c	Increasing CO_2 level	No change in O_2 and CO_2 levels	Increasing O_2 level
d	No change in O_2 and CO_2 levels	Increasing O_2 level	Increasing CO_2 level

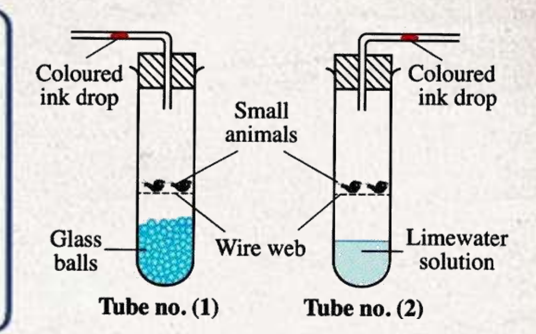


EXAM NIGHT

Multiple choice questions



The two opposite figures illustrate an experiment to measure the rate of respiration in some small animals, determine the direction of the coloured ink drop in the two tubes ....



(A).

(B).

(C).

(D).

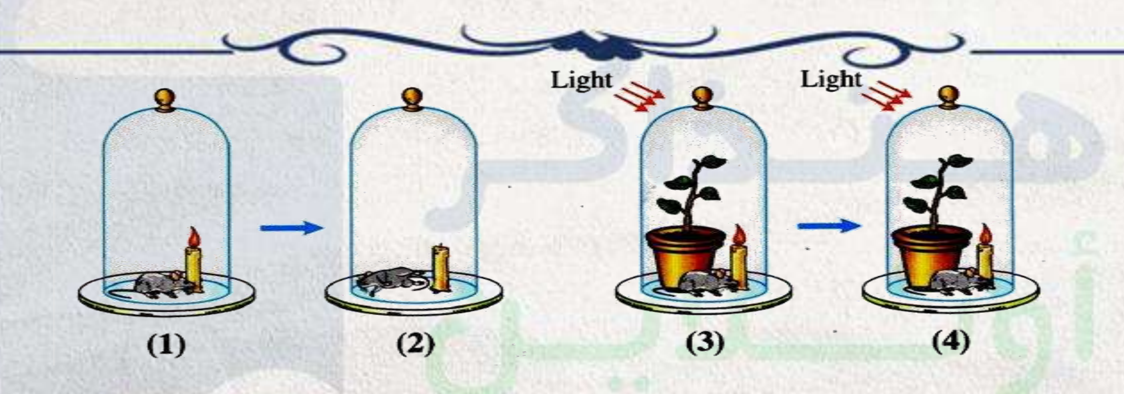
	The direction in	
	Tube no. (1)	Tube no. (2)
(a)	Inward	Outward
(b)	Inward	Remains constant
(c)	Outward	Inward
(d)	Remains constant	Inward




EXAM NIGHT **Essay questions**



From the following figures, explain why the mouse died and the candle burnt out in figure no. (2), and why the mouse lived and the candle remained light in figure no. (4).





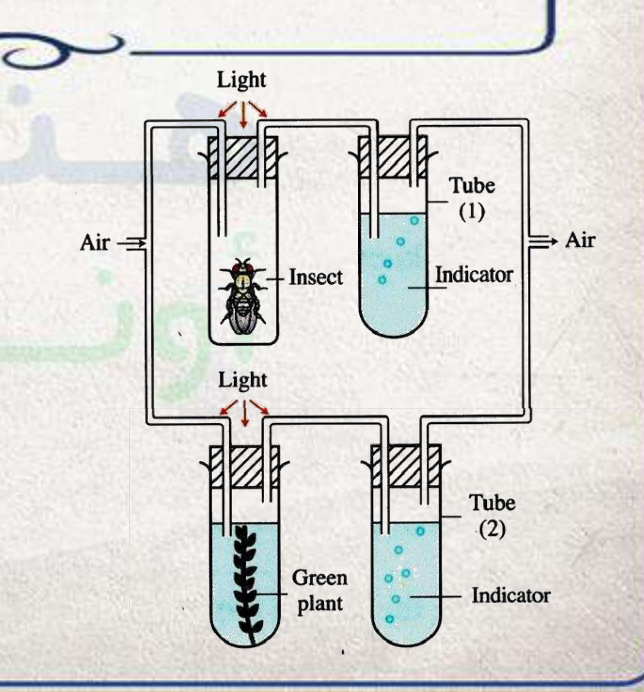


EXAM NIGHT **Essay questions**



Study well the opposite figure that represents an experiment to compare between the amount of carbon dioxide resulted from the respiration of an insect and an aquatic green plant, then answer :

(a) What is the name of the substance that is used in detecting CO_2 ?





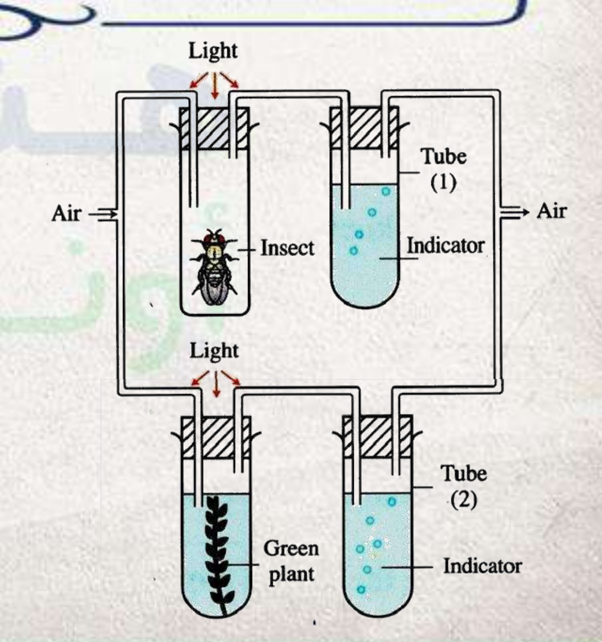


EXAM NIGHT **Essay questions**

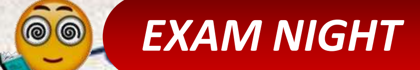


Study well the opposite figure that represents an experiment to compare between the amount of carbon dioxide resulted from the respiration of an insect and an aquatic green plant, then answer :

(b) After one hour from the beginning of the experiment, the indicator doesn't change in tube no. (2), but it changes in tube no. (1). What is your explanation ?







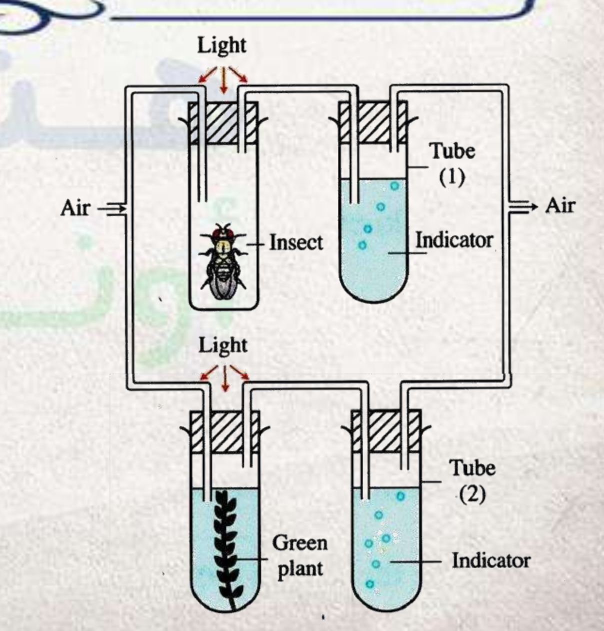
EXAM NIGHT

Essay questions



Study well the opposite figure that represents an experiment to compare between the amount of carbon dioxide resulted from the respiration of an insect and an aquatic green plant, then answer :

(c) What do you except to happen, on putting the apparatus in darkness for a long time ?







EXAM NIGHT | **Essay questions**



"Fish need in their farms a sufficient amount of dissolved oxygen to cover their respiration needs".

Suggest several natural methods to decrease the need to pump oxygen in the fish farms.







كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9

خطوة 1

خطوة 2 اختيار اسم الطابعة بتاعتك

خطوة 3 كتابة الصفحات المراد طباعتها نكتب رقم 4 ثم نكتب الشرطة دي - ثم نكتب 9

خطوة 4 اختيار نوع الورق

خطوة 5 اختيار A4

خطوة 6

المراجعة رقم (2)







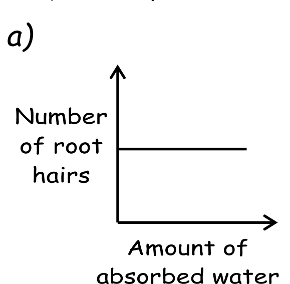
Biology
Secondary 2
First Term

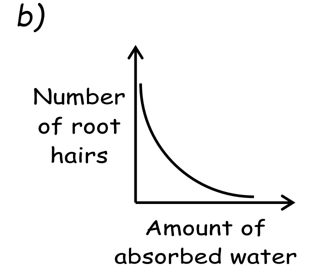
Final Revision 2022

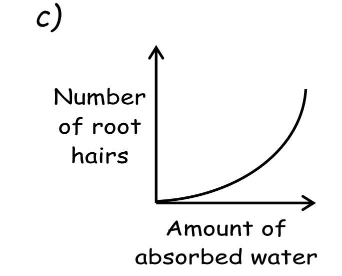
First: Guiding Questions From The Ministry Of Education

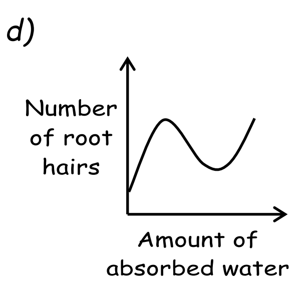
*1] **Choose**:*

1. *Which of the following graphs represent the relation between the number of root hairs and the amount of absorbed water ? ………*

a)


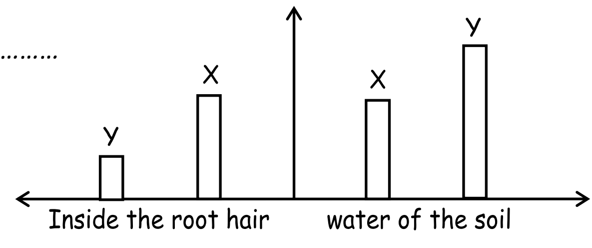
b)


c)


d)


2. *Study the following figure which represents the concentration of ion (X) and (Y) for elements needed by a certain plant in the soil and inside the root hair of this plant, then determine the physical phenomena that lead to transfer of ion (X) and (Y) consequently ? ………*





a) *Active transport, Diffusion*
b) *Selective permeability, Active transport*
c) *Diffusion, Selective permeability*
d) *Selective permeability, Diffusion*

3. *Which of the following substances DOES NOT transported through the transporting system in plants?*

a) H_2O b) *Glucose* c) *Cellulose* d) Mg^{+2}

4. *During preparation of a cross section in a stem of recent dicot plant, and adding Iodine dye on the sample to be clearer*
What is the tissue(s) that you expect NOT to be stained by the deep blue color?

a) *Pericycle and cambium.* b) *Cortex and Pith.*
c) *Medullary rays and Pith.* d) *Cortex and vascular bundle.*



5. *Which of the following plant leaves produce largest amount of oxygen at day time?*

a)  b)  c)  d) 

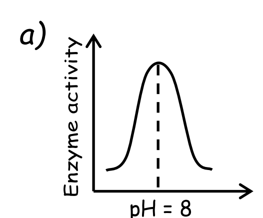
6. *Study the following table, and then conclude:*

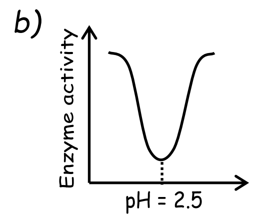
Substance	*Concentration in villi*	*Concentration in transporting vessels*
Na^{+}	155 mg / 100 ml	15 mg / 100 ml
Glycine	0.02 %	0.1 %
H_2O	75 %	70 %
Cl^{-}	1.01 mg / 100 ml	1.5 mg / 100 ml
Fat droplets	0.33 %	0.35 %

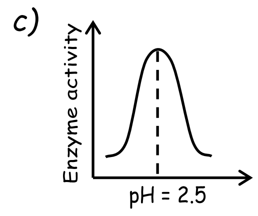
Which substance transferred to the transporting vessels by the same property?

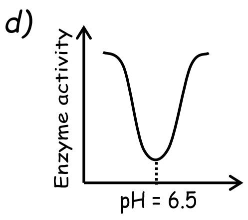
a) Sodium ions and Chlorine.
b) Water and Fat droplets.
c) Chlorine ions and Glycine.
d) Glycine and Fat droplets.

7. *If you know that pepsin enzyme is active in narrow range of high concentrations of hydrogen ions. What is the graph relation that represents the highest rate of activity for pepsin and pH value?*

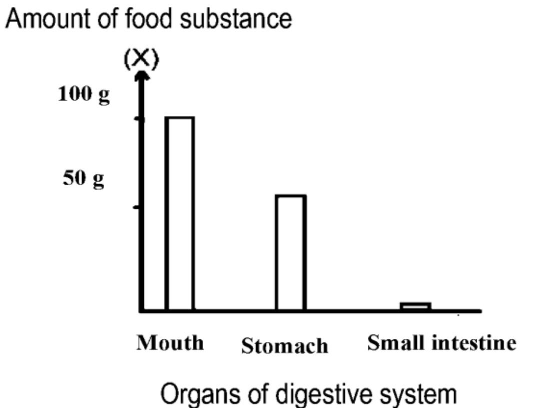
a)


b)


c)


d)


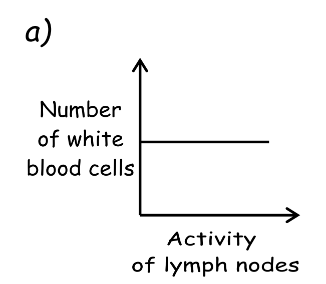
8. *Study the graph which represents the pathway of 100 gm of food substance (X) across the different parts of digestive system after more than one hour of its eating.*

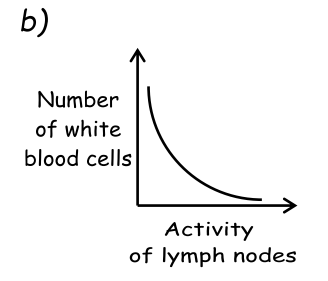


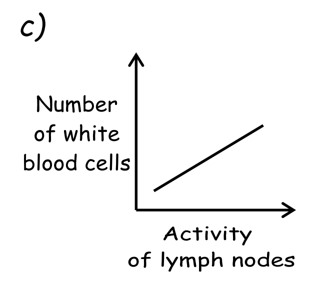
What is the form of substance (X) will be transported through the villi in small intestine?

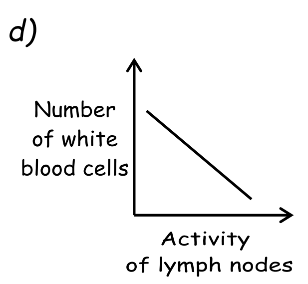
a) Glycerin.
b) Monosaccharide.
c) Fatty acids.
d) Amino acids.

9. *What is the graph relation that represents the immunity state for a person in the first days of bacterial infection ?*

a)


b)


c)


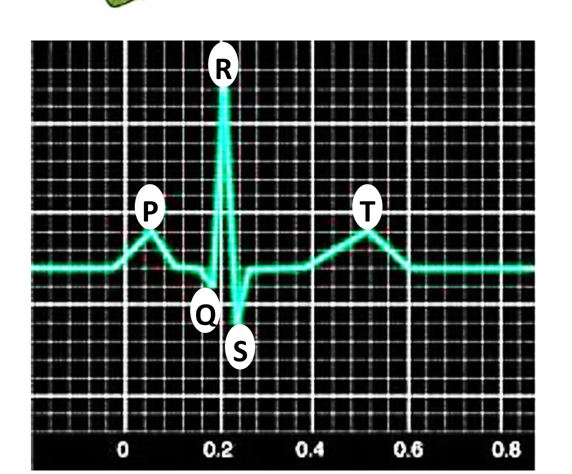
d)


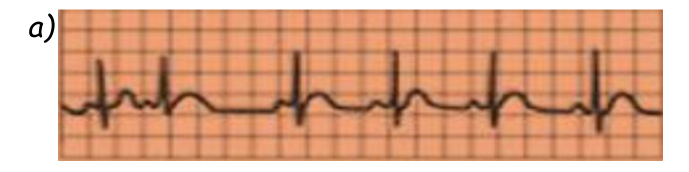
10. *Study the two figures then conclude:*
What are represented by the arrow number (1) and the arrow number (2) consequently?
a) Carbon dioxide and Oxygen.
b) Water vapor and Carbon dioxide.
c) Oxygen and water vapor.
d) Oxygen and Carbon dioxide.

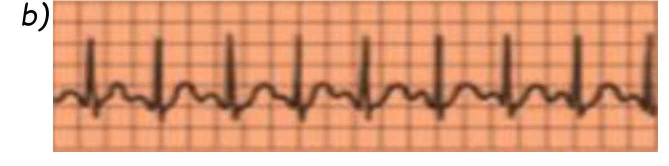
(2)
(1)
red blood cells
(1)
(2)

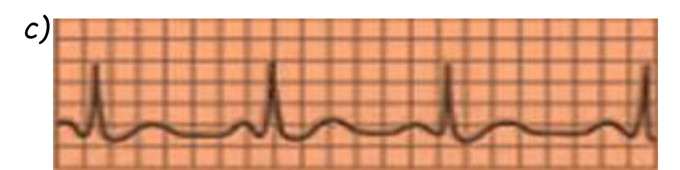
11. *The picture represents part of electrocardiogram (EKG) for normal human heart. If you know that:*
- *Part (P) represents contraction of atria to pump the blood to ventricles.*
- *Part (QRS) represents the contraction of ventricles to pump the blood outside the heart.*
- *part (T) represents the secondary contraction of ventricles to pump blood residues outside the heart.*

Which of the following diagrams represents the slow heart beats rate?



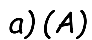
a)


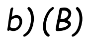
b)


c)


d)

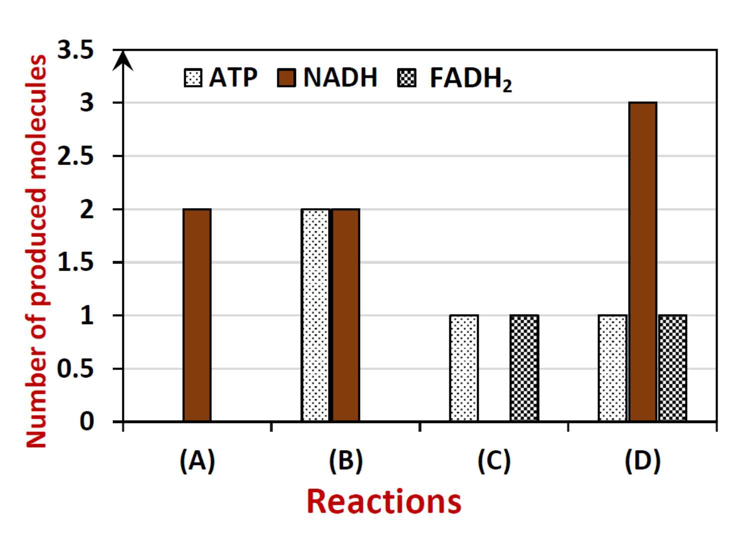

12. *Study the graph which represents some products of cellular respiration reactions, then determine:*
Which reactions occur in the cell cytoplasm?


a) (A)


b) (B)

c) (C)

d) (D)



2] *Essay Questions*:

1. *Why are the cambium cells characterized by containing a big nucleus?*

………

………

2. *How the water could transfers to tracheid although it consists of one cell?*

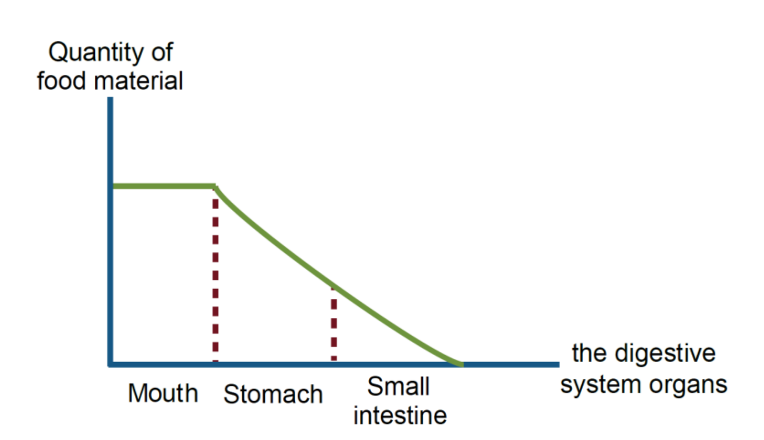
………

………

3. *Study the diagram that illustrates the quantity of food material during its passage in different organs inside the digestive system till it is digested completely, then determine:*

What is the food material that is represented by the diagram?

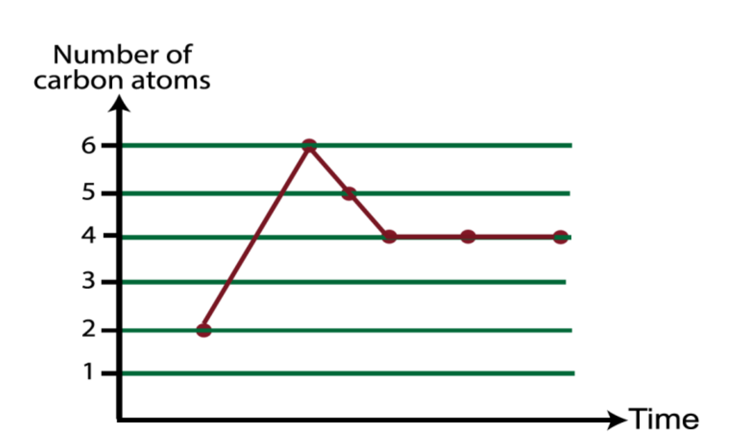
……………………………………………………………………………



4. *Study the graph that represents the change of carbon atoms number of the compounds that resulted from one of stages of cellular respiration, then deduce:*

   a) *Which cellular respiration stage that is represented by this graph?*

   ……………………………………………………………………

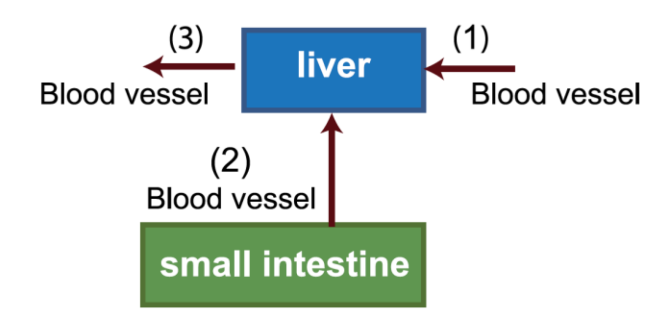


   b) *What is the number of ATP molecules that resulted of this stage?* ……………………………

5. *Study the figure and determine:*

   a) *What is the number of the blood vessel that transports amino acids in higher rate to the liver?* ………………………

   b) *What is the number of the blood vessel that transports vitamin (K) to the liver?* ………………



6. *Study the figure that illustrates a vital process that occurs in the plant leaf, then answer:*

Matter X + NADP → Matter Y + CO_2 → Matter Z

a) *What is the symbol of the matter that is considered an intermediate between light and dark reactions ? ……………………………*

b) *Where is matter (X) produced ? ……………………………*

Second: General Questions From EKB:

1] *Choose*:

1. *Which of the following best describes organisms that use autotrophic nutrition?*
 a) *They obtain food from feeding on other organisms.*
 b) *They do not require food but survive off water alone.*
 c) *They are able to synthesize their own food from simple inorganic materials.*
 d) *They automatically detect when food is present in an area.*

2. *Which of the following is **not** an example of a group that a heterotrophic organism could be classified into?*

a) *Phototrophs* b) *Holozoic* c) *Parasites* d) *Saprophytes*

3. *Which of the following is **not** true about the modes of nutrition of living organisms?*

a) *Fungi are only heterotrophs.* b) *Some animals are omnivores.*
c) *Bacteria are only heterotrophs.* d) *Plants are generally autotrophs.*

4. *Which of the following is **not** an adaptation of the stomach for digestion?*
 a) *The stomach has a low pH that is optimum for the activation of pepsin.*
 b) *The epithelial cells of the stomach produce a mucus lining that acts as a protective layer.*
 c) *The stomach produces hydrochloric acid that helps break down food and pathogens.*
 d) *The stomach produces and stores bile to aid the breakdown of fats.*

5. *Which class of enzymes present in the intestinal juice will hydrolyze the peptide bonds within a polypeptide chain?*

a) *Lipases* b) *Peptidases* c) *Carbohydrases* d)*Amylases*

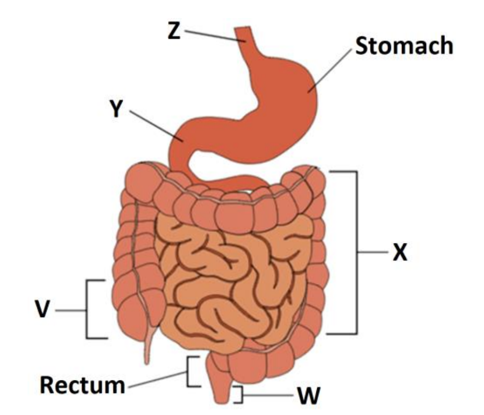
6. Which property of the stomach helps activate the enzyme pepsin?

a) The presence of HCl
b)The presence of bile
c) The enzyme enterokinase
d) The alkaline pH

7. Which of the following facts about the small intestine is true?

a) The average length of an adult human's small intestine is over 6 meters.
b) Digestion in the small intestine is aided by hydrochloric acid.
c) The small intestine directly connects to the rectum to remove solid waste.
d) Bile is secreted from the small intestine to break down proteins.

8. The diagram provided shows the human gastrointestinal tract.



Which letter indicates the duodenum?

a) Z
b) V
c) Y
d) X

9. What happens to the coenzyme NADP in the light-dependent stage of photosynthesis?

a) It loses electrons and a phosphate ion to become NAD.
b) It gains an oxygen ion to become oxidized NADP (NADPO+)
c) It gains electrons and H+ ions to become reduced NADP (NADPH).
d) It loses electrons and a H+ ion to form NADP+.

10. During the day, water vapour leaves the plant leaves by …………

a) osmosis
b) active transport
c) diffusion
d) imbibition

11. Which of the following maximizes the root pressure?

a) Low soil moisture
b) High soil moisture
c) High mineral content of the soil
d) None of the answers are correct.

12. Which of the following best describes lymph?

a) A fluid produced by lymph nodes that is used to regulate the body's water content
b) A fluid comprised of waste products that is transported by lymph vessels to the kidneys to be excreted
c) A fluid derived from blood, comprised of red blood cells, proteins, and platelets, that is transported in lymph vessels
d) A fluid derived from blood plasma, comprised of water, nutrients, and other biological molecules, that is transported in lymph vessels

13. Which of the following organs would be classified as lymphatic?

a) The lungs *b) The spleen* *c) The skin* *d) The heart*

*14. Which of the following is **not** a chamber of the human heart?*

a) Right atrium *b) Right aorta* *c) Left ventricle* *d) Left atrium*

15. From what chamber does the oxygenated blood leave the heart to be transported around the body?

a) Right atrium *b) Left atrium* *c) Right ventricle* *d) Left ventricle*

16. Which of the following best defines the term heart rate (bpm)?

a) The number of times the heart beats per minute
b) The number of times the heart stops per minute
c) The volume of blood the heart releases per minute
d) The number of times the heart beats per hour

17. What is the term that describes the movement of the food manufactured by photosynthesis to all the plant parts through the phloem?

a) Transpiration *b) Translocation* *c) Transformation* *d) Transgenation*

18. What is the role of thromboplastin in the process of blood clotting?

a) To form a net to trap red blood cells that aggregate into a clot
b) To initiate the conversion of the protein prothrombin into the enzyme thrombin
c) To initiate the release of calcium ions to encourage the aggregation of blood cells
d) To catalyze the conversion of soluble fibrinogen into insoluble fibrin

19. What happens to the blood when it is taken to the lungs?

a) It becomes oxygenated. *b) It becomes deoxygenated.*
c) It absorbs glucose. *d) It releases glucose*

20. Which of the following can help blood capillaries carry out their function?

a) Having three layers that facilitate the exchange of small molecules between blood and cells of tissues
b) Having valves that facilitate the exchange of blood between arteries and veins
c) Having thick walls that facilitate the exchange of large molecules between blood and tissues
d) Having small pores that facilitate the exchange of substances between blood and cells of tissues

21. Which layer of the artery wall has endothelium?

a) The outer layer *b) The middle layer* *c) The inner layer* *d) All of the layers*

22. Which of the following is one of the sites at which red blood cells are destroyed after their short life ends?

a) Pancreas *b) Kidney* *c) Liver* *d) Thymus*

23. A variety of factors affects blood pH, such as vomiting or having diarrhea. What is the normal pH of the blood in the human body?

a) Slightly acidic *b) Strongly acidic* *c) Strongly alkaline* *d) Slightly alkaline*

24. Which of the following makes arterial blood look bright red?

a) Carbo-aminohaemoglobin *b) Deoxyhaemoglobin*

c) Oxyhaemoglobin *d) Carboxyhaemoglobin*

25. What is the primary function of the sino-atrial node (SAN)?

a) Initiating the electrical impulse that generates a heartbeat
b) Passing electrical impulses through the walls of the ventricles
c) Initiating blood flow through the veins of the heart
d) Encouraging division and replication of heart cells

26. The sino-atrial node controls the rhythmic contraction of cardiac muscle. Which of the following is not true about cardiac muscle?

a) Cardiac muscle is involuntary muscle.
b) Cardiac muscle is found in the heart only.
c) Cardiac muscle contracts spontaneously.
d) Cardiac muscle pumps blood under voluntary control.

27. What is the role of reduced NAD and FAD in the electron transport chain?

a) To provide the energy to phosphorylate ADP to form ATP
b) To provide electrons for the electron transport chain
c) To act as the final electron acceptor
d) To actively transport hydrogen ions across the mitochondrial membrane

28. Why is oxidative phosphorylation considered an aerobic stage of respiration?

a) It can only happen in the presence of carbon dioxide.
b) It requires oxygen to be able to take place.
c) It produces oxygen as a by-product.
d) Each stage of the reaction produces an oxidized molecule.

29. Which of the following are products of oxidative phosphorylation?

a) Carbon dioxide and ATP *b) Reduced NAD and FAD*

c) ADP and oxygen *d) ATP and water*

30. During the conversion of pyruvic acid into acetyl-CoA. What happens to the coenzyme NAD?

a) It is hydrolyzed. *b) It is oxidized.* *c) It is reduced.* *d) It is phosphorylated.*

31. What is the primary reactant of the reaction that occurs in between glycolysis and the Krebs cycle ?

a) Glucose *b) Citric acid* *c) Pyruvic acid* *d) Acetyl-CoA*

*32. Which of the following is **not** a product of fermentation?*

a) Lactic acid *b) NADH* *c) Carbon dioxide* *d) Alcohol*

*33. What product of anaerobic respiration in animal cells is **not** a product of aerobic respiration?*

a) Water *b) Lactic acid* *c) Carbon dioxide* *d) Oxygen*

34. When making bread, which of these types of fermentation is mainly involved in the process?

a) Alcoholic fermentation *b) Acetic acid fermentation*

c) Lactic acid fermentation *d) All of the answers are correct.*

35. An alveolus has a large surface area relative to its volume. Which of the following best describes the advantage of this?

a) A large surface area allows the temperature to be regulated more easily.

b) A large surface area allows more diffusion to occur.

c) A large surface area prevents the entry of microbes or pathogens.

d) A large surface area provides more space for the enzyme-controlled reactions to take place.

36. What gas is transported out of the bloodstream and into the lungs to be exhaled?

a) Sulfur dioxide *b) Carbon monoxide* *c) Carbon dioxide* *d) Nitrogen*

37. In what part of a eukaryotic or prokaryotic cell does glycolysis take place?

a) Cytoplasm *b) Ribosomes* *c) Cell membrane* *d) Mitochondria*

38. Why is glycolysis considered an anaerobic reaction?

a) Because it does not require oxygen

b) Because oxygen is not produced

c) Because oxygen is a key reactant

d) Because carbon dioxide is produced

Third: Previous Tablet Exams:

January (2020) Mid-year exam (Model 1):

➔ ***Choose:***

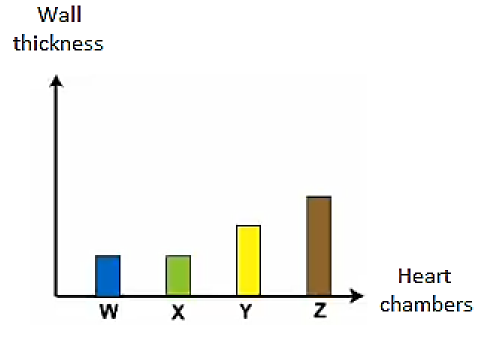
1) *What is the mechanism of absorption for the products of starch digestion ?*
   a) *Active transport to the arterioles (arterial capillaries).*
   b) *Active transport to the lacteal vessel.*
   c) *Diffusion to the lacteal vessel.*
   d) *Diffusion to the venules (venous capillaries).*

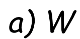
2) *What is the result of absence of the pits from xylem vessels in a plant leaf ?*
   a) *Increasing in the salts and H_2O transfer to the palisade cells.*
   b) *Stopping the light and dark reactions.*
   c) *Stopping the transfer of sucrose and amino acids.*
   d) *Increasing the dark reactions rate.*

3) *Which of the following digestive organs may have dysfunction in a person, so the doctors advised him not to eat more food rich in fats ?*

a) Pancreas. *b) Small intestine.* *c) Oesophagus.* *d) Stomach.*

4) *Study the opposite graph which expresses the difference in the thickness of muscular fibers which form the human heart chambers, then determine which column represents the right ventricle ?*

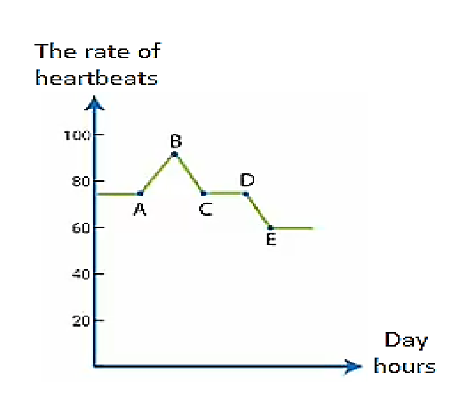



a) W *b) X*
c) Y *d) Z*

5) *When the precipitation of lignin increases in the xylem vessels, the ascent of sap increases. Which phenomenon represents this relation ?*

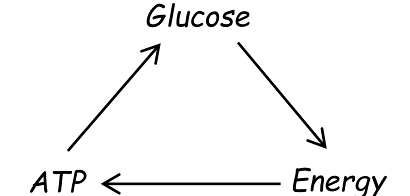
a) Cohesion force. *b) Adhesion force.* *c) Osmotic pressure.* *d) Capillarity phenomenon.*

6) *Study the opposite graph which shows the heartbeats rate for Amir during the day then, determine the interval time that represents practicing a physical activity ....*



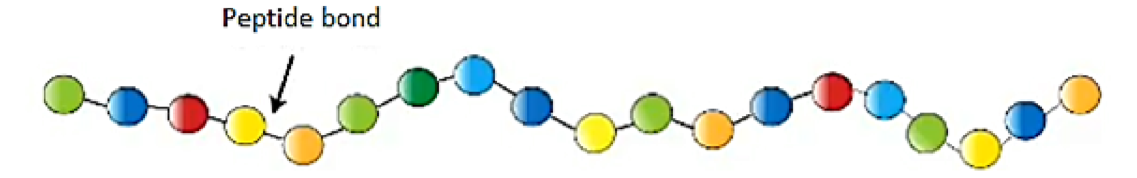
   a) *AB*
   b) *DE*
   c) *BC*
   d) *CD*

7) The opposite diagram shows some vital processes that occur inside some living organisms, in which of the following organisms do these processes take place.



a) Chlorella alga
b) Yeast fungus
c) Bilharzia worms
d) Orobanche plant

8) Study the following figure, then determine:



Which of the following enzymes affects this compound to start its absorption?

a) Amylase.
b) Pepsin.
c) Trypsin.
d) Peptidase.

9) In an experiment similar to that of Melvin Calvin, CO_2 with O^{18} isotope and H_2O with O^{16} isotope were used, what is the product that is resulted first ?

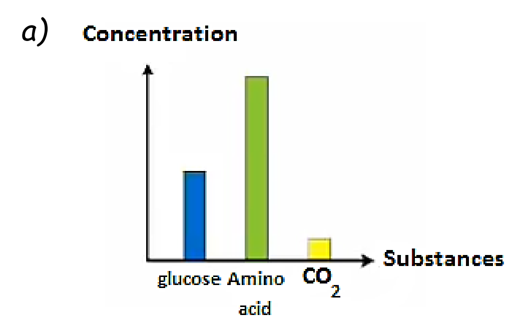
a) PGAL containing O^{16}.
b) Glucose containing O^{16}.
c) PGAL containing O^{18}.
d) Glucose containing O^{18}

10) Which of the following accompany the formation of glucose 6-phosphate ?

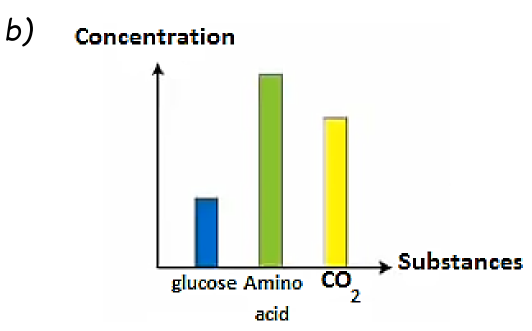
a) Energy production.
b) Energy consumption.
c) CO_2 production.
d) O_2 consumption.

11) Which of the following graphs describes the substances concentration in the hepatic portal vein.

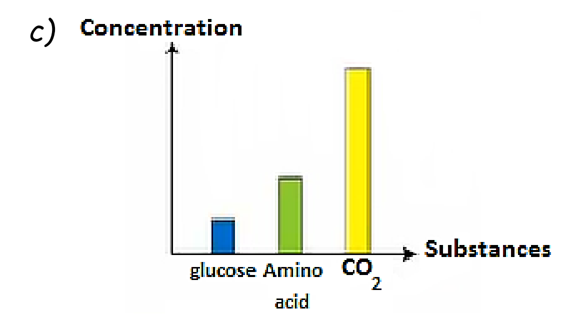
a)



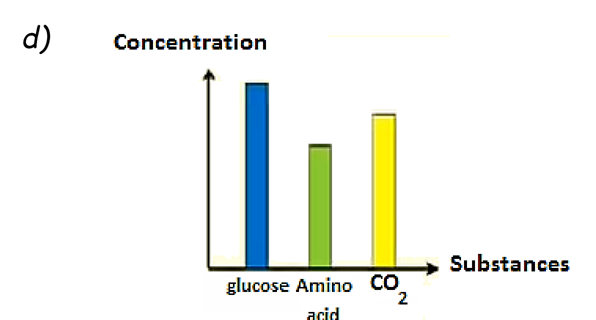
b)



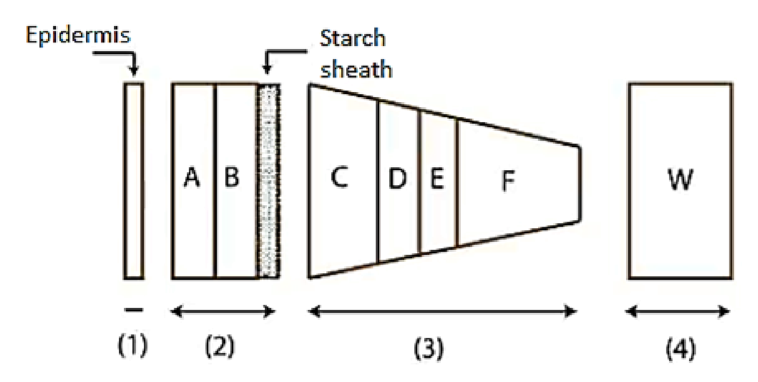
c)



d)



12) *Study the following diagram which shows four parts in the stem of a dicot. Plant, arranged from outside to inside, then determine:*



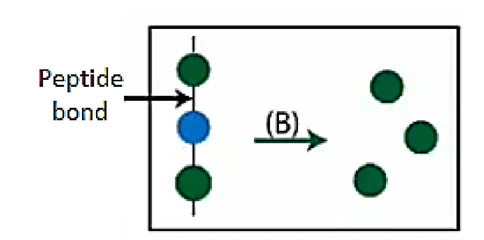
What is the function of each of (F) & (D) tissues ?

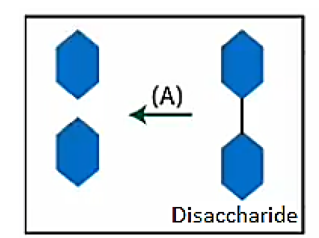
a) *Aeration.*
b) *Elasticity.*
c) *Sap storage.*
d) *Sap transfer.*

13) *Which body organ can perform the formation and destroying of two types of blood components ?*

a) *Heart* b) *Liver* c) *Pancreas* d) *Spleen*

14) *Study the following diagram, then answer the following question:*





What is the suitable value of pH for the activation of (A) and (B) enzymes together ?

a) *6* b) *7* c) *8* d) *9*

15) *What are the compounds that their formation inside the chloroplast is affected by "N" deficiency ?*

a) *Enzymes.* b) *PGAL.* c) *Glucose.* d) *Starch.*

16) *If you plant normal plants in desert and small number of them adapted well with this environment, which of the following factors its increase leads to the adaption of these plants ?*

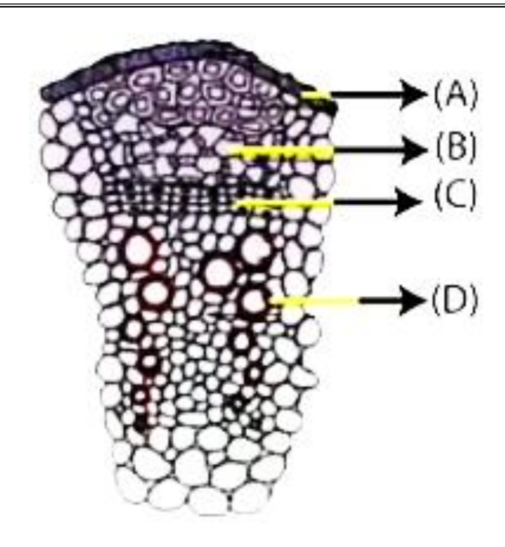
a) *The tallness of vegetative parts of the plant.*
b) *The concentration of cell sap of root cells.*
c) *The shortness of the root.*
d) *The small volume of sap vacuoles of the root.*

17) *What are the food substance that are re-built and work as an insulator which protects the body from cold weather ?*

a) *Vegetables and fruits.* b) *Meat and eggs.*
c) *Meat and vegetables.* d) *Peanuts and sesame.*

18) Study the opposite figure which shows a part of T.S. in a dicot plant stem, which of the following expresses the undifferentiated cells ?

a) A
b) B
c) C
d) D



19) From which do the walls of blood vessels ends, that spread between the cells of liver tissue are formed ?

a) Epithelial layer.
b) Epithelial and muscular layers.
c) Muscular and connective layers.
d) Muscular layers.

20) What is the blood vessel expressed in the opposite graph ?

a) Pulmonary artery.
b) Renal artery.
c) Vena cava.
d) Hepatic vein.

Oxygen concentration

Time

21) The opposite graph represents the produced organic compounds during a stage of aerobic respiration, what is the number of ATP molecules produced during this stage ?

a) One molecule.
b) Two molecule.
c) Three molecule.
d) Twelve molecule.

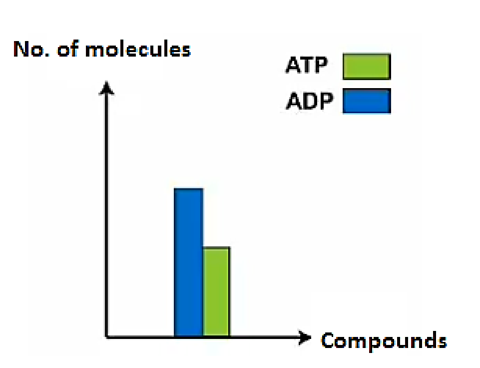
No. of carbon atoms in the produced organic compound

6 5 4 3 2 1

Time

22) Study the opposite graph which expresses some products of photosynthesis process reactions, then determine which reaction occurs during this stage ?

a) H_2O splitting.
b) NADP reduction.
c) Photosynthetic phosphorylation.
d) CO_2 reduction.



23) What is the result of sugar deficiency in the sap vacuoles of Nitella alga which live in a swamp poor in chlorine, although the plant needs it ?

a) Chlorine absorption increases.
b) Water absorption decreases.
c) Active transport process decreases.
d) Starch production rate increases.

24) Which of the following compounds, its deficiency affects the rate of respiration and photosynthesis process in Elodea plant ?

a) ATP
b) NAD^+
c) FAD
d) NADP

25) Study the opposite figure, then determine the pressure value in the vessel (X) in case (2) ?

…………………… mm Hg.

a) 10
b) 70
c) 130
d) 160

(X) (X)

(2) (1)

26) Which of the following transfers prothrombin to its activation site ?

a) Blood platelets.
b) WBCs.
c) RBCs.
d) Plasma.

27) Which graphical relation doesn't express the cytoplasmic streaming inside sieve tube ?

a) Cytoplasmic streaming / Temperature

b) Cytoplasmic streaming / Glucose concentration

c) Cytoplasmic streaming / Oxygen concentration

d) Cytoplasmic streaming / ADP concentration

28) Which of the following is responsible for aeration in plant leaves ? ……… tissue

a) Palisade
b) Spongy
c) Collenchyma
d) Vascular

29) Study the following diagram:

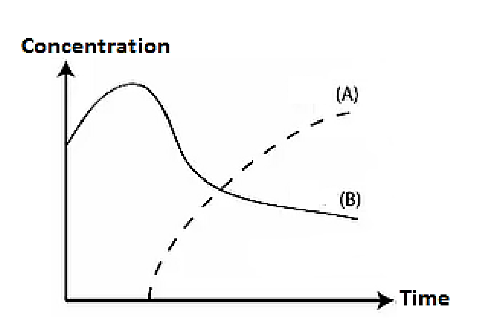
Blood capillaries ← X — Alveolus — Y → Air

Which of the following represents (X) & (Y) respectively ?

a) CO_2, O_2
b) O_2, CO_2
c) Water vapor, O_2
d) Water vapor, CO_2

30) The opposite graph represents the concentration of two types of compounds in the thigh muscles, during practicing vigorous exercise, which of the following expresses (A) & (B) respectively ?

a) ADP, glucose.
b) Lactic acid, glucose.
c) Glycogen, ATP.
d) Glycogen, lactic acid.



January (2020) Mid-year exam (Model 2):

The different questions from model (1) only

➔ **Choose**:

1) Study the following pathways:

- Alveolus ⟶ O_2 ⟶ Blood capillaries.
- Small intestine ⟶ Amino acids ⟶ Blood capillaries.
- Atmospheric air ⟶ CO_2 ⟶ Plant cells.

What is the common mechanism in transferring the substances in the previous pathways ?

a) Active transport b) Osmosis c) Diffusion d) Imbibition

2) What is the result of precipitation of suberin on the double membrane of chloroplasts ?

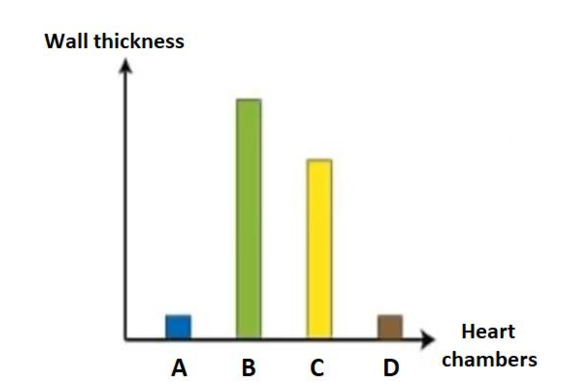
a) Glucose won't be formed b) High speed in O_2 formation
c) Difficulty in the light passage d) Water passes easily

3) Which type of food can be digested in both acidic and alkaline media ?

a) Rice b) Potato c) Fat d) Meat

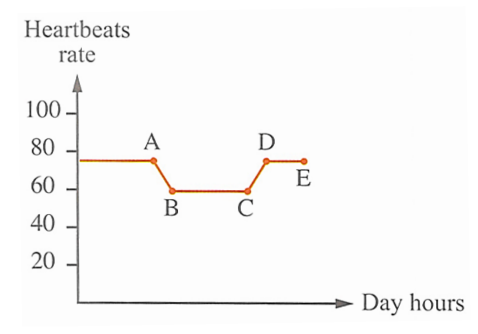
4) Study the opposite graph which expresses the difference in the thickness of muscular fibers which form the human heart chambers, what is the chamber that is represented by column (B) ?

a) Right atrium b) Left ventricle
c) Right ventricle d) Left atrium

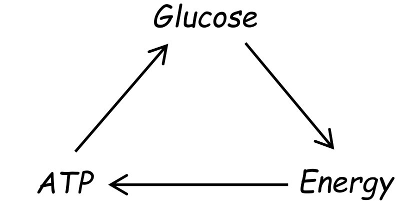


5) Study the opposite graph which shows the heartbeats rate for Amir during the day then, determine the phase that represents the time of sleeping ………

a) AB b) DE
c) BC d) CD



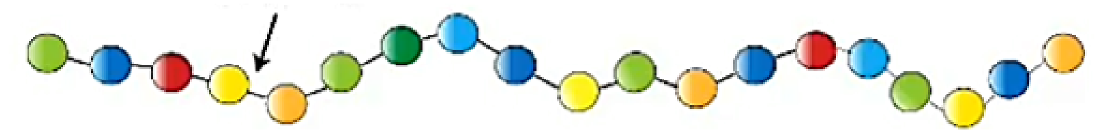
6) *Study the diagram which represents two vital processes that occur in the living organisms, then determine:*



At which type of cells do these processes take place ?

a) Companion cells *b) Xylem parenchyma*
c) Spongy layer *d) Plant epidermis*

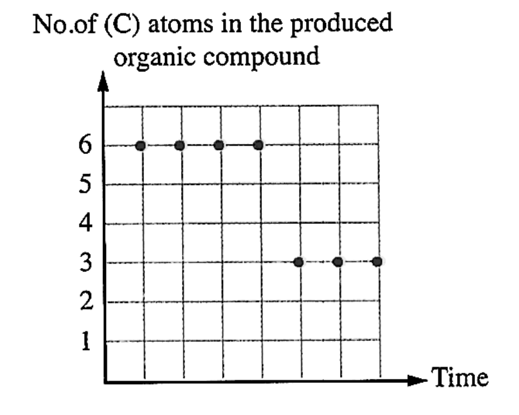
7) *Study the following figure, then determine:*



Which of the following ends the digestion of this compound completely ?

a) Pepsin in stomach. *b) Trypsin in small intestine.*
c) Peptidase in small intestine. *d) Amylase in duodenum.*

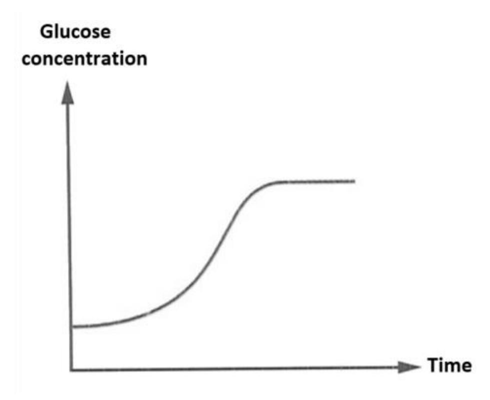
8) *Study the opposite graph which describes the organic compounds that are formed during cellular respiration inside the cytoplasm of a living organism's cell in case of oxygen deficiency then determine:*



What is the living organism that performs this type of respiration ?

a) Paramecium *b) Amoeba*
c) Yeast fungus *d) Bacteria*

9) *What is the blood vessel that is represented by the curve in the opposite graph ?*

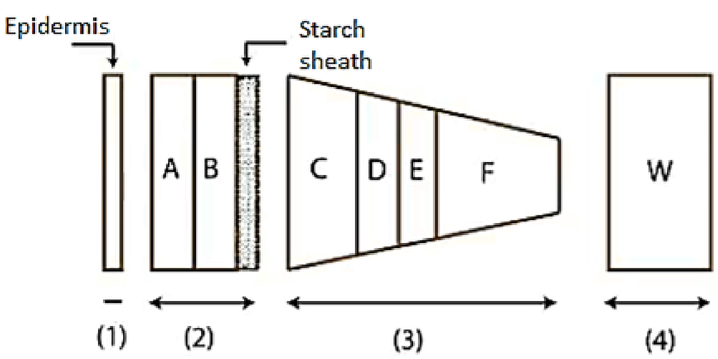


a) Hepatic vein *b) Pulmonary artery*
c) Hepatic artery *d) Portal vein*

10) *A child ate a meal containing wheat and milk, what is the suitable pH value for the action of several enzymes together to digest this meal ?*

a) 6 *b) 8* *c) 5* *d) 7*

11) *Study the following diagram which shows four parts in the stem of a dicot plant, arranged from outside to inside, then determine:*



What is the function of each of (B) & (W) tissues ?

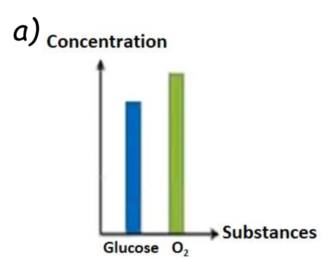
a) *Transporting organic substances.*
b) *Transporting inorganic substances.*
c) *Aeration and storage.*
d) *Elasticity and support.*

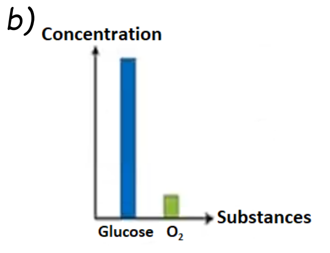
12) *Which of the following plants are characterized by high osmotic pressures ?*
a) *Normal and desert plants.*
b) *Desert plants and fresh water environment plants.*
c) *Desert plants and salty water environment plants.*
d) *Normal plants and fresh water environment plants.*

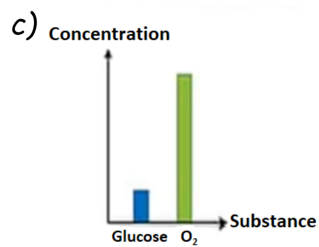
13) *What are the types of food needed by a person who practices bodybuilding ?*
a) *Rice & vegetables.* b) *Meat & eggs* c) *Juices & vegetables* d) *Rice & juices*

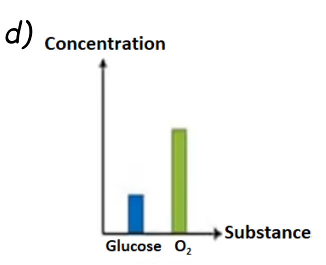
14) *What is the result of the presence of a layer of cambium in the stem of a dicot plant ?*
a) *An increase in the transport rate.* b) *Widening of the secondary xylem cavities.*
c) *An increase in the length of phloem tubes.* d) *A decrease in the stem support.*

15) *Which graph represents the blood vessel which is directed from the pregnant mother to her fetus ?*

a)


b)


c)


d)


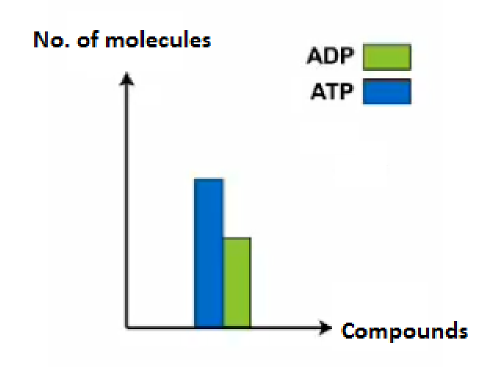
16) *What happens to ketoglutaric acid when it is converted into succinic acid during cellular respiration ?*
a) *It consumes* CO_2 b) *It consumes ATP molecules*
c) *It loses electrons* d) *It combines with oxygen*

17) *Which of the following blood components can the body make benefit from them through their different stages ?*
a) *Red blood corpuscles* b) *Plasma proteins*
c) *Blood platelets* d) *White blood cells*

18) *Study the opposite graph which expresses some products of photosynthesis process reactions, then determine:*

Which of the following occurs during this stage ?

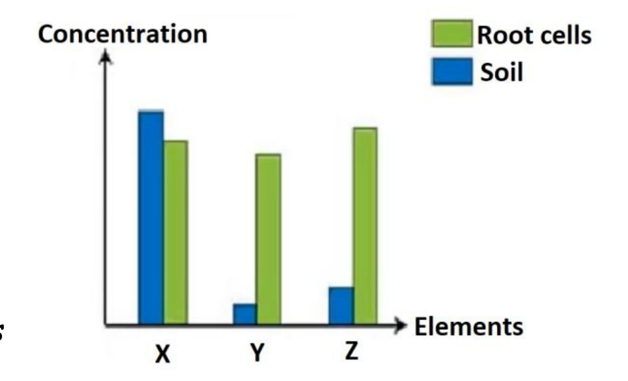
a) $NADPH_2$ oxidation
b) CO_2 reduction.
c) H_2O formation.
d) Release of O_2



19) *Study the opposite figure which shows the plant need for (Y) and (Z) elements to perform vital processes:*

What is the factor that helps in increasing the concentration of (Y) and (Z) inside the root cells ?

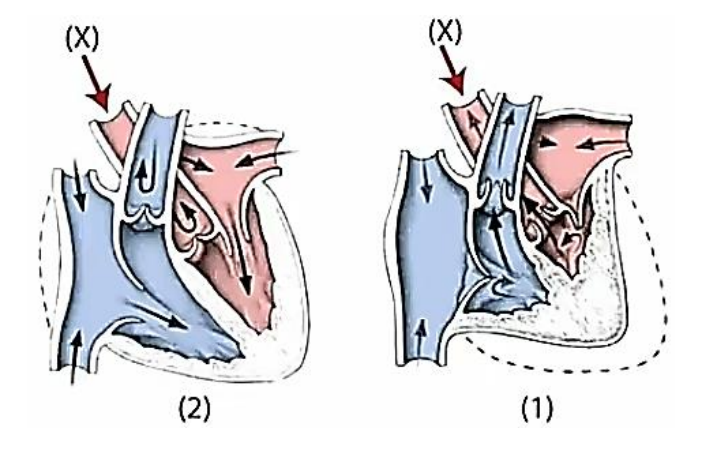
a) Plenty of oxygen inside the root cells
b) Decrease of oxygen inside the root cells
c) Decrease of sugar inside sap vacuoles of the root cells
d) Plenty of water inside sap vacuoles of the root cells



20) *Study the opposite figure, then determine the pressure value in the vessel (X) in case (1) ?*

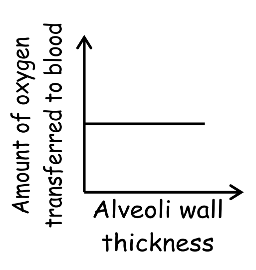
…………………… mm Hg.

a) 130
b) 10
c) 80
d) 60

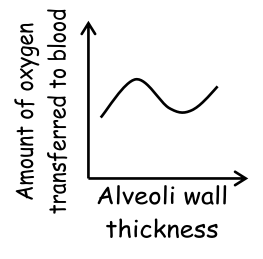


21) *Which of the following graphs expresses the efficiency of air sacs (alveoli) in the two lungs ?*

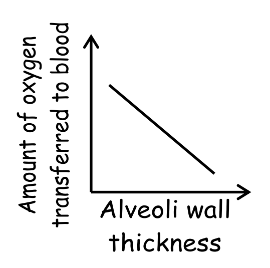
a)



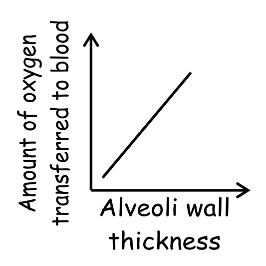
b)



c)



d)

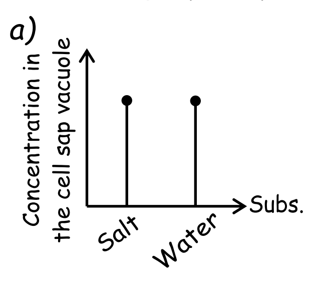


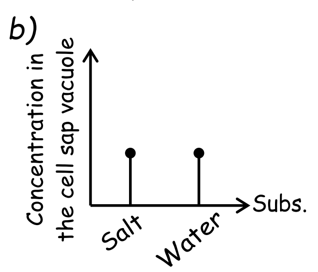
January (2021) Mid-Year exam:

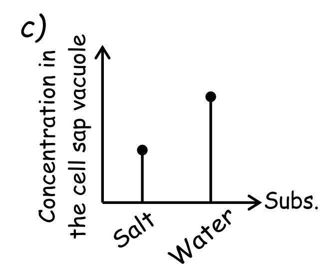
➔ **Choose:**

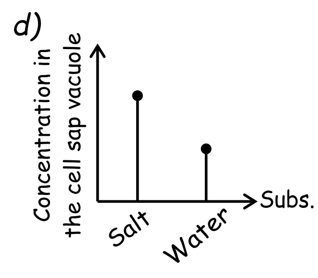
1) Which property (phenomenon) explains the reason of salty taste of vegetables on cooking them ?
   a) Imbibition b) Diffusion c) Active transport d) selective permeability

2) Which graph represents the sap vacuole in an aquatic plant ?

a)


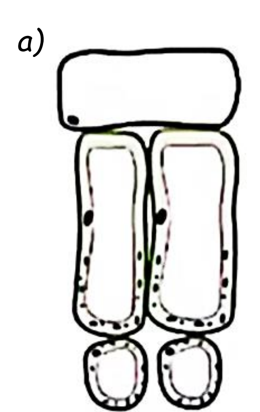
b)


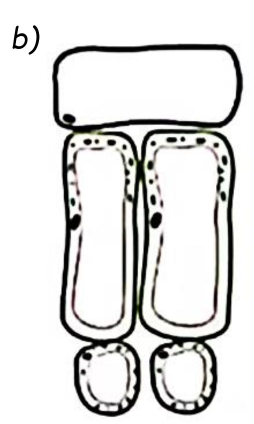
c)


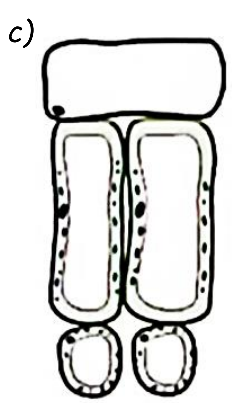
d)


3) The figures in front of you represent cellular structures in a plant leaf contain number of green plastids.

Which of these figures represents the exposure of the plant to __lowest__ amount of light ?

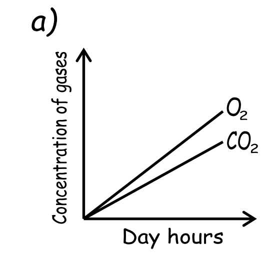
a)


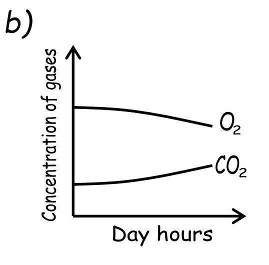
b)


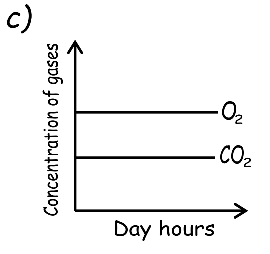
c)


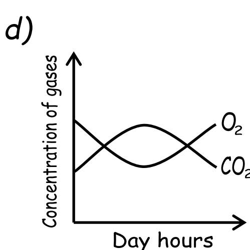
d)


4) Which graph represents the concentration of O_2 and CO_2 that are produced from a potted plant in a bell jar covered with a black piece of cloth ?

a)


b)


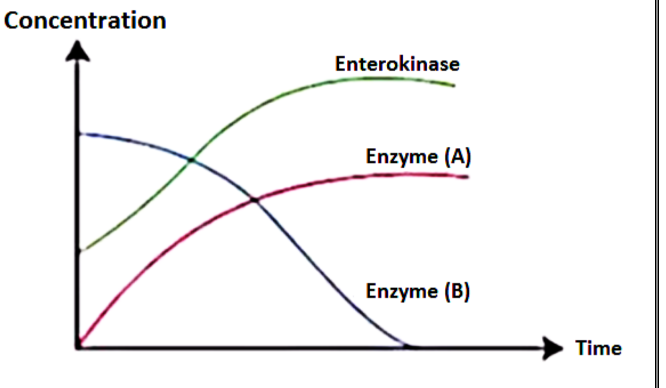
c)


d)


5) Which of lymph components could help in formation of blood clots ?
   a) Na^+ b) Vitamin D c) Vitamin A d) Ca^{+2}

6) *Study the following graph that shows the relation between 3 enzymes share in digestion of a food staff.*

What is the result of the digestion of the digestion of food substance that is affected by enzyme (A) ?

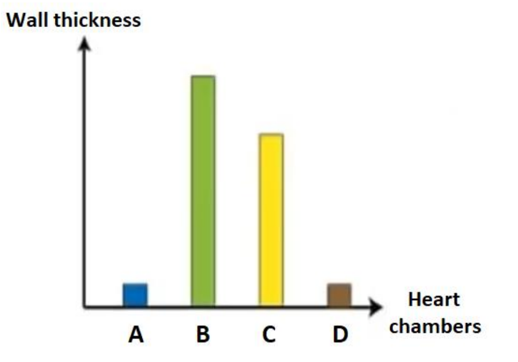


a) Polypeptides *b) Disaccharides*

c) Amino acids *d) Fatty acids*

7) *Study the graph that illustrates the differences of thickness of human heart chambers wall, then conclude:*

What is the cardiac chamber that pumps blood to the two lungs ?



a) A *b) B*

c) C *d) D*

8) *What happens when a drop of water enters the trachea ?*

a) Cilia movement from downward to upward decreases

b) Humidity in the nose increases as a respiratory path.

c) Cilia movement from downward to upward increases

d) The ratio of water vapor coming out during exhalation decreases

9) *Study the next figure then determine:*

$H_2O + CO_2$ —Process (x)→ Glucose —Process (y)→ 38 ATP

Which of the following depends on the (x) and (y) processes to obtain energy ?

a) Bean *b) Amoeba* *c) Yeast* *d) Saprophytic bacteria*

10) *What is the similarity between xylem and phloem tissue in the stem of the plant ?*

a) They transport the high energy materials

b) The walls of their cells contain lignin

c) They transport the low energy materials

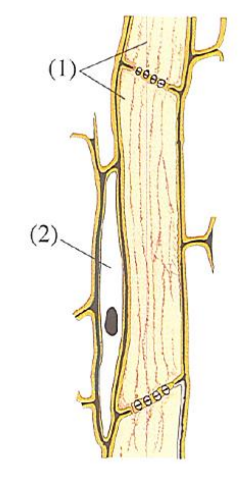
d) They are produced from meristematic cells

11) *What is the process which describes the formation of glucose in ileum ?*

a) Catabolism *b) Metabolism* *c) Absorption* *d) Hydrolysis*

12) Which of the following substances passes from cell (1) to cell (2) through plasmodesmata ?

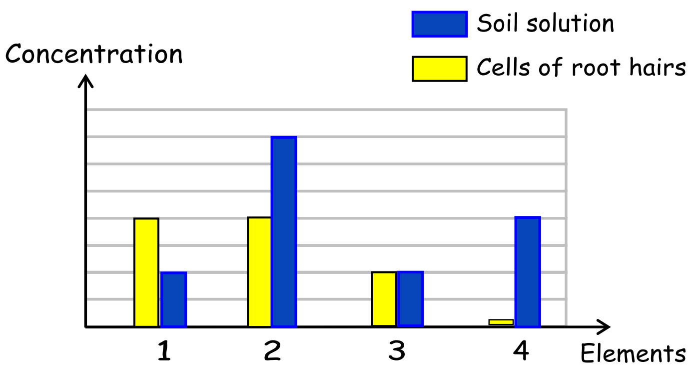
a) ATP
b) Salts
c) Glucose
d) Water



13) Study the graph that illustrates the concentration of ions of some elements in the soil and the cells of root hairs of a certain plant, then determine:

Which element is more absorbed by diffusion

a) 2 b) 3
c) 1 d) 4



14) Amira kept a seedling of basil plant in a glass of water for two days.

What is the factor that helps in cultivating the seedling in a pot ?

a) Immersing its roots immediately in a wet soil.
b) Leaving the seedling exposed to sunrays.
c) Immersing its roots immediately in a dry soil.
d) Covering the shoot system by a bag before cultivating it.

15) Study the figure then answer:

Which diagram represents the highest activity of the sino-atrial node for this healthy person who is doing this activity ?

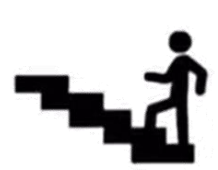
a) 



b)



c)



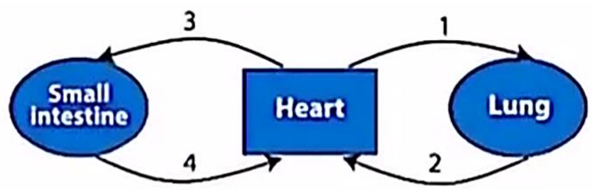
d)



16) What is the factor that <u>doesn't</u> affect the rate of photosynthesis process in the plant ?

a) The number of plastids
b) The thickness of cutin
c) The concentration of chlorophyll
d) The number of stomata

17) *Study the opposite diagram which represents a part of the blood circulation in the human, then determine:*



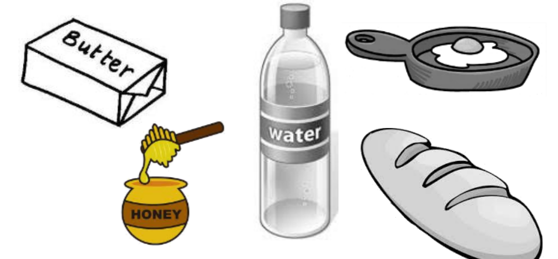
Which blood vessel where the blood flows in the highest blood pressure ?

a) 2 *b) 4* *c) 3* *d) 1*

18) *Adel ate the shown breakfast.*

Which food substance will take different path during its absorption ?

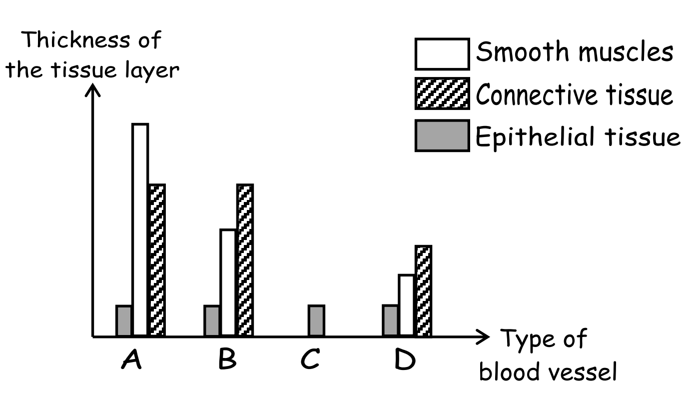
a) Bread
b) Butter
c) Egg white
d) Honey



19) *Study the graph that illustrates the relation between the thickness of tissue layer that forms the different types of blood vessels of human body.*

Which of them transfers the oxygenated blood to the kidney ?

a) C *b) A*
c) D *d) B*



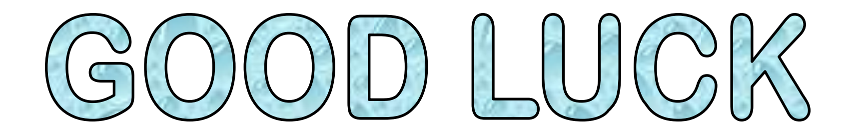
20) *What is the factor that* ***not*** *affect the rate of photosynthesis process in the plant ?*

a) The number of plastids *b) The thickness of cutin*
c) The concentration of chlorophyll *d) The number of stomata*

21) *Adel suffers from breathing difficulty and extreme fatigue when doing any physical effort. If the doctor asked him to make a complete blood picture.*

Which of the blood components is expected to be less than their normal rate *?*

a) White blood corpuscles *b) Blood platelets*
c) Blood plasma *d) Red blood corpuscles*



Model Answer

First: Guiding Questions From The Ministry Of Education

1] Choose:

1. c	4. a	7. c	10. a
2. a	5. c	8. d	11. c
3. c	6. c	9. c	12. b

2] Essay Questions:

1. Because it has the ability to divide to form secondary xylem and secondary phloem.
2. Through the pits that found in the walls of tracheid and its pointed ends
3. Proteins
4. a) Krebs cycle – or – Citric acid cycle b) One molecule of ATP
5. a) Blood vessel (2). b) Blood vessel (1).
6. a) matter (Y) b) In grana

Second: General Questions From EKB:

1. c) They are able to synthesize their own food from simple inorganic materials.
2. a) Phototrophs
3. c) Bacteria are only heterotrophs.
4. d) The stomach produces and stores bile to aid the breakdown of fats.
5. b) Peptidases
6. a) The presence of HCl
7. a) The average length of an adult human's small intestine is over 6 meters.
8. c) Y
9. c) It gains electrons and H+ ions to become reduced NADP (NADPH).

10. c) diffusion

11. b) High soil moisture

12. d) A fluid derived from blood plasma, comprised of water, nutrients, and other biological molecules, that is transported in lymph vessels

13. b) The spleen

14. b) Right aorta

15. d) Left ventricle

16. a) The number of times the heart beats per minute

17. b) Translocation

18. b) To initiate the conversion of the protein prothrombin into the enzyme thrombin

19. a) It becomes oxygenated.

20. d) Having small pores that facilitate the exchange of substances between blood and cells of tissues

21. c) The inner layer

22. c) Liver

23. d) Slightly alkaline

24. c) Oxyhaemoglobin

25. a) Initiating the electrical impulse that generates a heartbeat

26. d) Cardiac muscle pumps blood under voluntary control.

27. b) To provide electrons for the electron transport chain

28. b) It requires oxygen to be able to take place.

29. d) ATP and water

30. c) It is reduced.

31. c) Pyruvic acid

32. b) Oxygen

33. b) Lactic acid

34. a) Alcoholic fermentation

35. b) A large surface area allows more diffusion to occur.

36. c) Carbon dioxide

37. a) Cytoplasm

38. a) Because it does not require oxygen

Third: Previous Tablet Exams:

January (2020) Mid-year exam (Model 1)

1. a	7. a	13. d	19. a	25. b
2. b	8. d	14. c	20. b	26. d
3. a	9. c	15. b	21. a	27. b
4. c	10. b	16. b	22. d	28. b
5. d	11. d	17. d	23. c	29. b
6. a	12. d	18. c	24. a	30. b

January (2020) Mid-year exam (Model 2)

1. c	6. c	11. c	16. c	21. c
2. a	7. c	12. c	17. a	
3. d	8. d	13. b	18. d	
4. b	9. d	14. b	19. a	
5. c	10. b	15. a	20. a	

January (2021) Mid-Year exam

1. b	6. c	11. d	16. b	21. d
2. d	7. c	12. c	17. c	
3. b	8. c	13. d	18. b	
4. b	9. a	14. a	19. b	
5. d	10. d	15. a	20. c	

20) *What is the food substance that body may depends on it to build up the enzymes necessary for completing the vital processes ?* **[DUE TO REPETITION, THIS QUESTION IS ADDED WITH ANSWER]**

a) Rocca b) Maize c) Egg d) Orange

Tablet Exam 2020

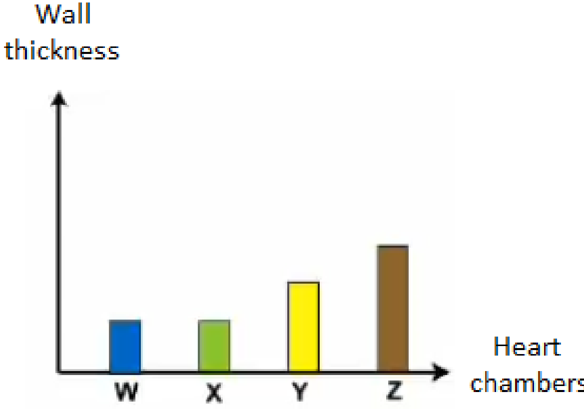
Select the best answer:

1) *What is the mechanism of absorption for the products of starch digestion ?*
   a) *Active transport to the arterioles (arterial capillaries).*
   b) *Active transport to the lacteal vessel.*
   c) *Diffusion to the lacteal vessel.*
   d) *Diffusion to the venules (venous capillaries).*

2) *What is the result of absence of the pits from xylem vessels in a plant leaf ?*
   a) *Increasing in the salts and H_2O transfer to the palisade cells.*
   b) *Stopping the light and dark reactions.*
   c) *Stopping the transfer of sucrose and amino acids.*
   d) *Increasing the dark reactions rate.*

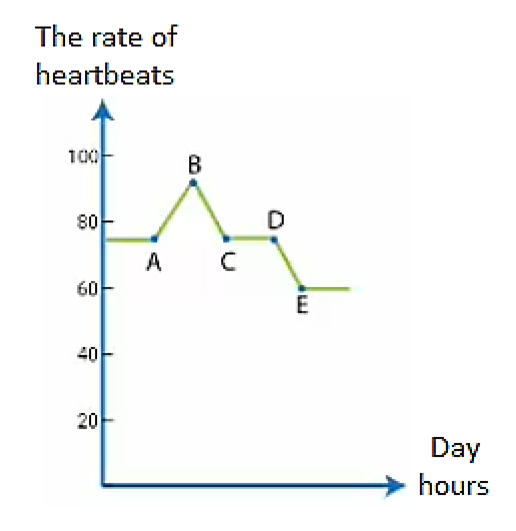
3) *Which of the following digestive organs may have dysfunction in a person, so the doctors advised him not to eat more food rich in fats ?*
   a) *Pancreas.*
   b) *Small intestine.*
   c) *Oesophagus.*
   d) *Stomach.*

4) *Study the opposite graph which expresses the difference in the thickness of muscular fibers which form the human heart chambers, then determine which column represents the right ventricle ?*
   a) *W*
   b) *X*
   c) *Y*
   d) *Z*

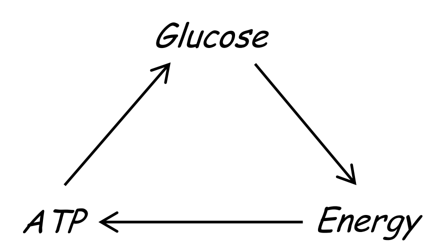


5) *When the precipitation of lignin increases in the xylem vessels, the ascent of sap increases. Which phenomenon represents this relation ?*
   a) *Cohesion force.*
   b) *Adhesion force.*
   c) *Capillarity phenomenon.*
   d) *Osmotic pressure.*

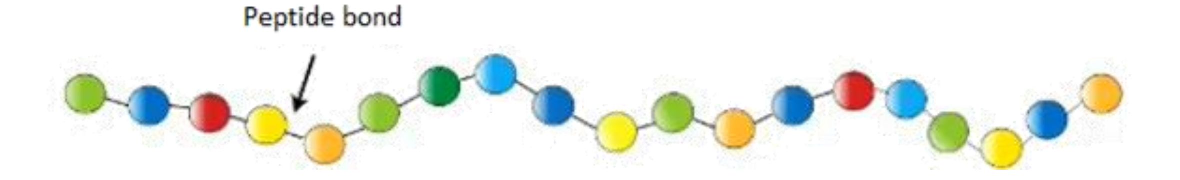
6) *Study the opposite graph which shows the heartbeats rate for a person during the day then, determine the interval time that represents practicing a physical activity?*
   a) *AB*
   b) *DE*
   c) *BC*
   d) *CD*



7) *The opposite diagram shows some vital processes that occur inside some living organisms, in which of the following organisms do these processes take place.*
   a) *Chlorella alga*
   b) *Yeast fungus*
   c) *Bilharzia worms*
   d) *Orobanche plant*



8) *Study the following figure, then determine:*



Which of the following enzymes affects this compound to start its absorption?

a) *Amylase.*
b) *Pepsin.*
c) *Trypsin.*
d) *Peptidase.*

9) *In an experiment similar to that of Melvin Calvin, CO_2 with O^{18} isotope and H_2O with O^{16} isotope were used, what is the product that is resulted first ?*

a) *PGAL containing O^{16}.*
b) *Glucose containing O^{16}.*
c) *PGAL containing O^{18}.*
d) *Glucose containing O^{18}*

10) *Which of the following accompany the formation of glucose 6-phosphate ?*

a) *Energy production.*
b) *Energy consumption.*
c) *CO_2 production.*
d) *O_2 consumption.*

11) Which of the following graphs describes the substances concentration in the hepatic portal vein.

a)

Concentration
Substances
glucose Amino acid CO_2

b)

Concentration
Substances
glucose Amino acid CO_2

c)

Concentration
Substances
glucose Amino acid CO_2

d)

Concentration
Substances
glucose Amino acid CO_2

12) Study the following diagram which shows four parts in the stem of a dicot. Plant, arranged from outside to inside, then determine:

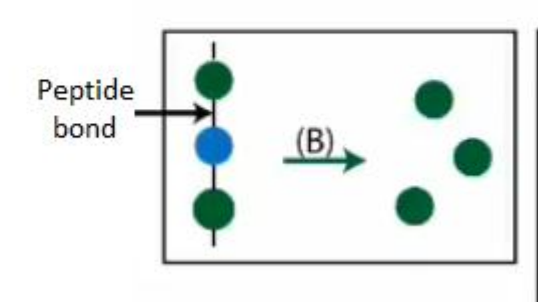
Epidermis
Starch sheath
A B
C D E F
W
(1) (2) (3) (4)

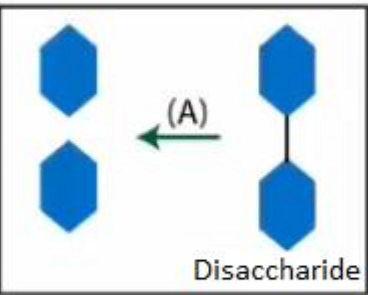
What is the function of each of (F) & (D) tissues ?

a) Aeration.
b) Elasticity.
c) Sap storage.
d) Sap transfer.

13) *Which body organ can perform the formation and destroying of two types of blood components ?*
   a) *Heart*
   b) *Liver*
   c) *Pancreas*
   d) *Spleen*

14) *Study the following diagram, then answer the following question:*





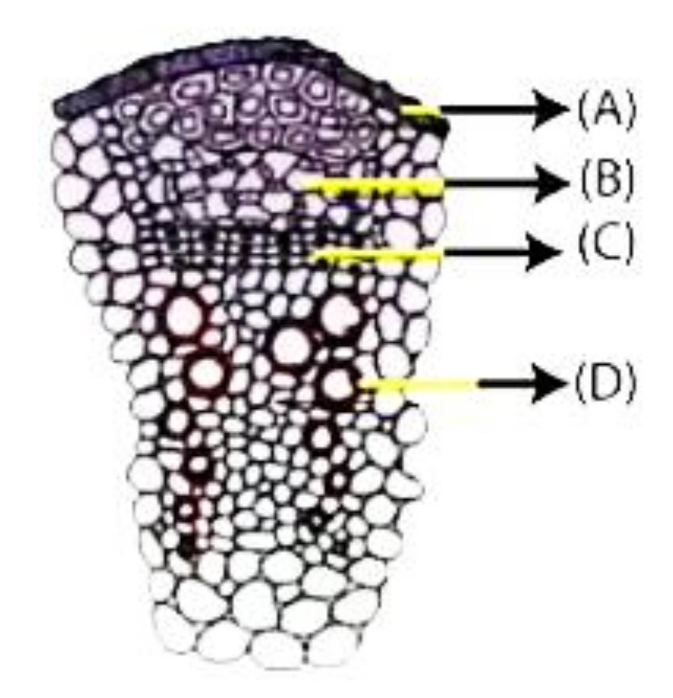
What is the suitable value of pH for the activation of (A) and (B) enzymes together ?

a) 6 b) 7 c) 8 d) 9

15) *What are the compounds that their formation inside the chloroplast is affected by "N" deficiency ?*
   a) *Enzymes.*
   b) *PGAL.*
   c) *Glucose.*
   d) *Starch.*

16) *If you plant normal plants in desert and small number of them adapted well with this environment, which of the following factors its increase leads to the adaption of these plants ?*
   a) *The tallness of vegetative parts of the plant.*
   b) *The concentration of cell sap of root cells.*
   c) *The shortness of the root.*
   d) *The small volume of sap vacuoles of the root.*

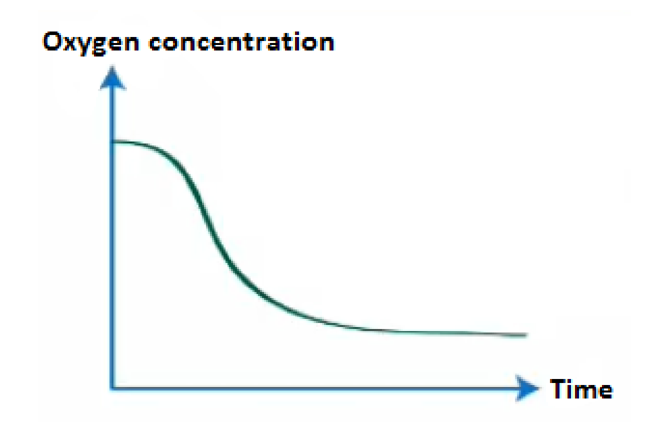
17) *What are the food substance that are re-built and work as an insulator which protects the body from cold weather ?*
   a) *Vegetables and fruits.*
   b) *Meat and eggs.*
   c) *Meat and vegetables.*
   d) *Peanuts and sesame.*



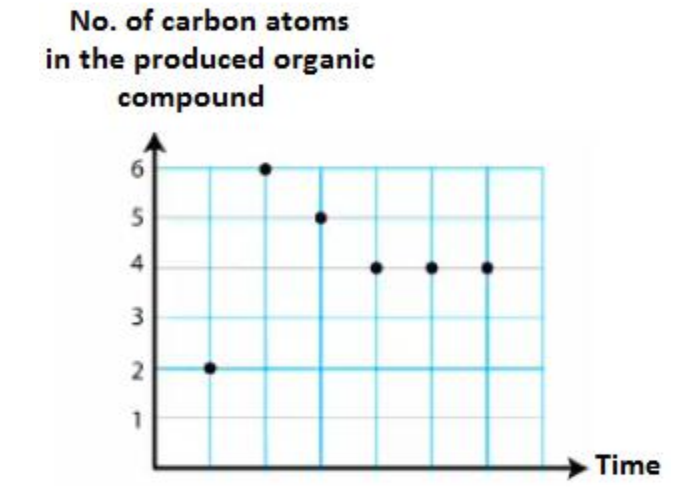
18) *Study the opposite figure which shows a part of T.S. in a dicot plant stem, which of the following expresses the undifferentiated cells ?*
   a) *A*
   b) *B*
   c) *C*
   d) *D*

19) *From which do the walls of blood vessels ends, that spread between the cells of liver tissue are formed ?*
   a) *Epithelial layer.*
   b) *Epithelial and muscular layers.*
   c) *Muscular and connective layers.*
   d) *Muscular layers.*

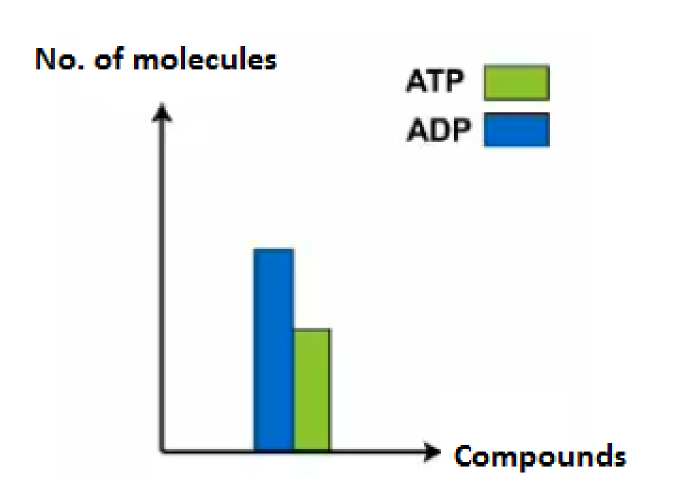
20) *What is the blood vessel expressed in the opposite graph ?*
- a) *Pulmonary artery.*
- b) *Renal artery.*
- c) *Vena cava.*
- d) *Hepatic vein.*



21) *The opposite graph represents the produced organic compounds during a stage of aerobic respiration, what is the number of ATP molecules produced during this stage ?*
- a) *One molecule.*
- b) *Two molecule.*
- c) *Three molecule.*
- d) *Twelve molecule.*



22) *Study the opposite graph which expresses some products of photosynthesis process reactions, then determine which reaction occurs during this stage ?*
- a) *H_2O splitting.*
- b) *NADP reduction.*
- c) *Photosynthetic phosphorylation.*
- d) *CO_2 reduction.*



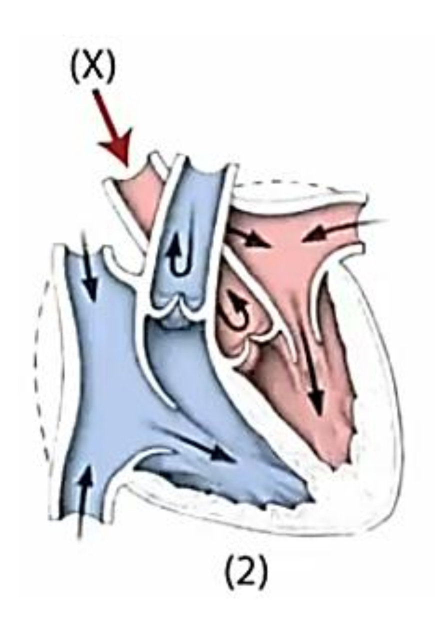
23) *What is the result of sugar deficiency in the sap vacuoles of Nitella alga which live in a swamp poor in chlorine, although the plant needs it ?*

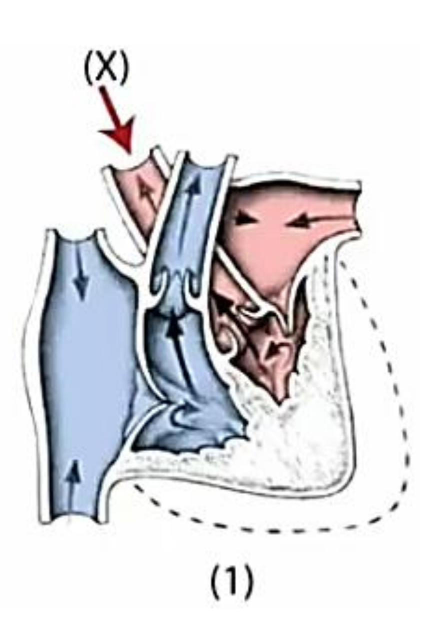
a) *Chlorine absorption increases.*
b) *Water absorption decreases.*
c) *Active transport process decreases.*
d) *Starch production rate increases.*

24) *Which of the following compounds, its deficiency affects the rate of respiration and photosynthesis process in Elodea plant ?*

a) *ATP*
b) *NAD^+*
c) *FAD*
d) *NADP*

25) *Study the opposite figure, then determine the pressure value in the vessel (X) in case (2) ?*





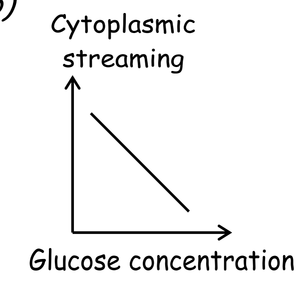
…………………… mm Hg.

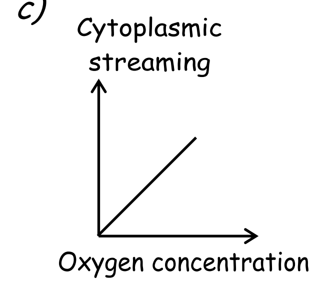
a) *10*
b) *70*
c) *130*
d) *160*

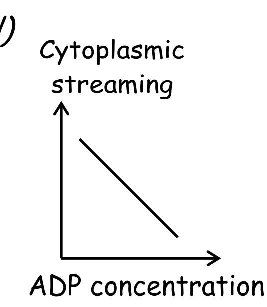
26) *Which of the following transfers prothrombin to its activation site ?*
   a) *Blood platelets.*
   b) *WBCs.*
   c) *RBCs.*
   d) *Plasma.*

27) *Which graphical relation doesn't express the cytoplasmic streaming inside sieve tube ?*

a)
Cytoplasmic streaming
Temperature

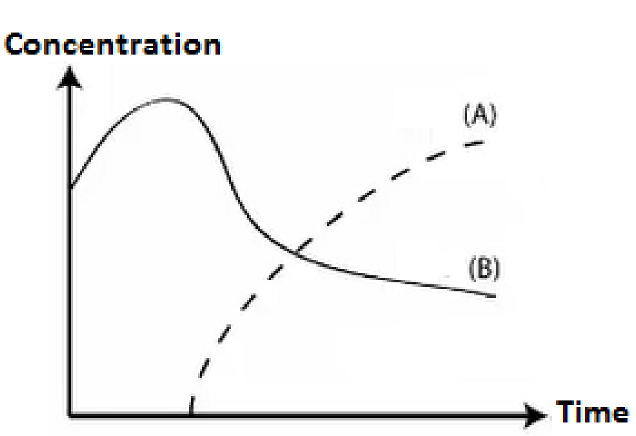
b)


c)


d)


28) *Which of the following is responsible for aeration in plant leaves ? ……… tissue*
   a) *Palisade*
   b) *Spongy*
   c) *Chollenchyma*
   d) *Vascular*

29) *The opposite graph represents the concentration of two types of compounds in the thigh muscles, during practicing vigorous exercise, which of the following expresses (A) & (B) respectively ?*
   a) *ADP, glucose.*
   b) *Lactic acid, glucose.*
   c) *Glycogen, ATP.*
   d) *Glycogen, lactic acid.*



30) *Study the following diagram:*



Which of the following represents (X) & (Y) respectively ?

a) CO_2, O_2
b) O_2, CO_2
c) Water vapour, O_2
d) Water vapour, CO_2

GOOD LUCK

Model Answer

1)	a	16)	b
2)	b	17)	d
3)	a	18)	c
4)	c	19)	a
5)	c	20)	b
6)	a	21)	a
7)	a	22)	d
8)	d	23)	c
9)	c	24)	a
10)	b	25)	b
11)	d	26)	d
12)	d	27)	b
13)	d	28)	b
14)	c	29)	b
15)	a	30)	b



كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9



خطوة 1

خطوة 2 اختيار اسم الطابعة بتاعتك

خطوة 3 كتابة الصفحات المراد طباعتها نكتب رقم 4 ثم نكتب الشرطة دي – ثم نكتب 9

خطوة 4 اختيار نوع الورق

خطوة 5 اختيار A4

خطوة 6